The Information Role of Conservative Financial Statements

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September 20, 2006
First version 6/16/06

We thank Soeren Hvidkjaer and Joel Hasbrouck for some of the data used in the study and gratefully acknowledge comments by Anwer Ahmed, Holly Ashbaugh-Skaife, Paul Asquith, Robert Holthausen, Mozaffar Khan, S.P. Kothari, Karthik Ramanna, Sugata Roychowdhury, Joseph Weber, Yong Zhang, Jerry Zimmerman and the workshop participants at the University of Edinburgh, Humboldt University Berlin and MIT.

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Abstract

In this paper we argue that information asymmetry between informed and uninformed *equity* investors generates accounting conservatism in financial statements. Conservatism reduces the manager's incentives and ability to manipulate accounting numbers and so reduces information asymmetry and the deadweight losses that information asymmetry generates. This increases firm and equity values.

Our empirical tests are consistent with our proposition that information asymmetry among equity investors is significantly positively related to conservatism after controlling for contracting and other demands for conservatism. Further, our tests confirm our prediction that changes in information asymmetry between equity investors lead changes in conservatism. The second result rejects the FASB's proposition that conservatism produces information asymmetry among equity investors. An important implication is that, if the FASB were successful in meeting their stated goal of eliminating conservatism, they would *increase* information asymmetry between informed and uninformed investors, not *reduce* it. This outcome is inconsistent with the objectives of the Securities Acts.

1. Introduction

Conservatism is the differential verifiability required for the recognition of accounting gains versus losses that generates an understatement of net assets (Basu, 1997, and Holthausen and Watts, 2001, p. 37). The existing empirical evidence strongly suggests listed firms' financial statements are conservative in the U.S. (e.g., Basu, 1997, and Watts, 2003b) and in other Anglo-American law countries (e.g., Ball, Kothari and Robin, 2000). This conservatism is attributed to the use of financial statements in debt and/or compensation contracts, litigation, regulation and taxes (for a summary of the literature see Watts, 2003a and b). In these explanations, conservatism arises because of asymmetries in information and loss functions among the parties to contracts, litigation, regulation and taxation and the inability to verify the incremental information of the more informed parties.

In this paper we argue that information asymmetry between informed and uninformed equity investors in the firm generates a demand for conservatism *additional* to that from the sources listed above.[1] Informed investors are likely to be corporate insiders, such as managers and directors, and institutions given information by those insiders (Easley and O'Hara, 2004, pp. 1577-1578). We argue this additional source exists *absent* accounting-based debt and compensation contracts, litigation, regulation and taxes. Like information asymmetry in contracts, information asymmetry between informed and uninformed equity investors creates deadweight losses (agency costs) that reduce the firm's expected cash flows (Watts, 2003a, pp.215-216) and increases the

[1] The argument can also be extended to investors in other securities issued by the firm.

equilibrium return on the firm's equity (Easley and O'Hara, 2004, and Easley et al, 2002). Both effects reduce firm value. We argue conservatism is an *equilibrium* corporate governance response to mitigate the value reduction resulting from information asymmetry between informed and uninformed investors.

The negative firm value effect of information asymmetry between informed and uninformed equity investors is central to our argument. The effect gives parties to the firm an incentive to generate corporate governance mechanisms that reduce information asymmetry. Much of the information asymmetry arises from the nature of the firm's investment opportunity set, particularly the extent to which the firm has growth options (see Smith and Watts, 1992), but some also comes from the way in which the management formally collects and reports information. Greater information asymmetries from growth options give managers more opportunities to manipulate financial statements to transfer wealth to themselves via insider trading and excess stock-price-based compensation.[2] Those attempts are costly because they divert management's efforts from maximizing firm value and so generate agency costs just as attempts by managers to transfer wealth from other parties to debt and compensation contracts generate agency costs (Jensen and Meckling, 1976).

Security markets tend to anticipate the agency costs and reduce prices. This reduction in share value gives parties to the firm incentives to reduce information asymmetry and the consequent agency costs. We argue that conservative accounting developed as a mechanism for reducing information asymmetry and the consequent

[2] The legal restrictions on insider trading are likely to reduce reported insider trading, but are unlikely to prevent insider trading under other names.

agency costs in both contracting and security trading. Conservative accounting evolved over many centuries as a result of economic Darwinism (see Basu, 1995 and Watts, 2006).

We argue that conservatism reduces information asymmetries and agency costs by reducing the manager's ability and incentive to use information asymmetries associated with growth options to manipulate the financial statements to create more information asymmetry. The way in which conservatism reduces information asymmetry is analogous to the way in which conservatism reduces deadweight losses in contracting. Conservatism's asymmetric verifiability requirements limit the management's ability to introduce overstated unverifiable gains into and exclude losses from, financial statements.

As has been recognized in the contracting literature (e.g., Watts, 2003a), the asymmetry in verifiability standards for gains and losses arises from the asymmetric loss functions of the parties to the firm. Given his liability is effectively limited, the manager's incentive is to overstate performance and stock prices during his tenure and transfer resources from both shareholders and lenders.[3] The asymmetry in verification limits that ability to overstate and reduces the manager's incentive to spend time on that activity.

[3] Shareholders had de facto limited liability in the U.K. long before the law gave them limited liability because of the impossibility of enforcing unlimited liability (see DuBois, 1938, p.95). That de facto limited liability generated conservatism long before the existence of formal limited legal liability. Individuals also have de facto limited liability because there are limits to the penalties and unlimited liability cannot be enforced (see Watts, 2003a, p. 213).

We predict:

1. the larger the information asymmetry, the more conservative are the firm's financial statements, even after controlling for contracting, litigation, regulation and political uses of accounting; and

2. information asymmetry changes lead conservatism rather than conservatism producing information asymmetry (as suggested in FASB statements)[4].

We test our predictions using a sample of 20,389 firm year observations over the 1983 to 2001 time period. Conservatism is measured using the Basu (1997) regression model that regresses earnings on returns and allows the return coefficient to vary with the sign of the return. The estimated incremental coefficient on negative returns (incremental to the coefficient on positive returns), the Basu coefficient, is the conservatism measure. The information asymmetry measure is the PIN score (Easley, Hvidkjaer and O'Hara, 2002) that is larger, the greater the information asymmetry between informed and uninformed investors.[5]

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[4] The FASB has consistently opposed conservatism, for example see SFAC no. 2 (FASB, 1980) which states in Paragraph 93 that the "notion became deeply ingrained and is still in evidence despite efforts over the past 40 years to change it." In a handout for both the FASB's July 27, 2005 and the IASB's July 20, 2005 meetings on the conceptual framework (FASB, 2005, p. 24), the FASB responds to questions on "What is the role of conservatism? Does it conflict with neutrality? If not, why not? Why keep it?" with:

> "Financial information needs to be neutral – free from bias intended to influence a decision or outcome. To that end, the common conceptual framework should not include conservatism or prudence among the desirable qualitative characteristics of accounting information. However, the framework should note the continuing need to be careful in the face of uncertainty."

There certainly appears to be a view that the understatement of net assets and cumulative profits generated by conservatism will cause users of financial statements, including investors, to make incorrect inferences presumably because of uncertainty about the bias. The answer implies conservatism increases information asymmetry and so increases in conservatism lead to increases in information asymmetry between investors.

[5] The PIN score is the probability of an information-based trade derived from a structural market microstructure model (see Easley et al. (2002, 2004). Numerous prior studies (discussed in section 4) use the PIN score to capture difference in information asymmetries between informed and uninformed

Using cross-sectional Fama-MacBeth (1973) regressions we find that the Basu coefficient is larger, the larger the PIN score. In other words, firms with higher information asymmetry report more conservative earnings. These results are robust to controls for other factors associated with conservatism, specifically the market-to-book ratio, leverage, firm size, regulation and litigation, to estimation of the Basu coefficient over multi-year as well as one year intervals and to the use of the bid-ask spread as an alternative measure of information asymmetry. The controls for the factors associated with conservatism generate a very strong test of the first prediction since those factors are all theoretically and empirically associated with the existence of growth options and information asymmetry.

To test whether information asymmetry changes lead or lag conservatism we examine the association between annual conservatism measures and PIN score changes in the preceding year, the contemporaneous year, and the following year. We find that PIN score changes in the preceding and contemporaneous year are both positively associated with the annual conservatism measure. This means changes in information asymmetry both lead and are contemporaneous with conservatism. Consistent with this interpretation, we find that information asymmetry changes in the preceding year are negatively associated with the extent to which good news is reflected in annual earnings. This result implies the increased information asymmetry makes good news less verifiable in the future. These results are also robust to the use of bid-ask spread as the measure of information asymmetry.

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investors. In general the results of these studies are consistent with differences in PIN scores reflecting differences asymmetric information across firms.

Our interpretation of the combined results is that in practice the application of existing accounting standards reflects the asymmetric verification standards generated as a corporate governance mechanism in response to information asymmetry between equity investors as well as information asymmetry between contracting parties. Accounting and auditing practices incorporate the asymmetric verification. When relatively more of a firm's gains are unverifiable, the application of the asymmetric verifiability standards generates more conservatism. When the information asymmetry between equity investors in a firm increases (decreases) the application of the asymmetric verifiability standards following that increase (decrease) generates more (less) conservatism. Overall, our results are consistent with our predictions that the greater the information asymmetry, the more conservative are the firm's financial statements and that information asymmetry changes lead conservatism.

We begin in Section 2 by summarizing the contracting arguments for conservatism and drawing implications from the evidence on the use of accounting information in debt and compensation contracts. The section serves two purposes. First, it explains how the information asymmetry between contracting parties and the parties' asymmetric loss functions generate conservatism. Our arguments as to how information asymmetry between informed and uninformed investors parallel the contracting arguments to a large extent and so a relatively full explanation of the existing contracting arguments helps understand the asymmetrically informed investor arguments.[6] Second, the evidence on contractual use of accounting information has important implications for accounting's ability to reflect unverifiable information. The important implication is that

[6] Many of the contracting arguments for conservatism in the literature are partial at best. Two of the more complete explanations are in Watts (1993, pp. 3-7) and Watts (2003a, pp. 210-214)

including unverifiable good news in accounting reports allows increased management manipulation of accounting numbers so that the net effect is to increase, rather than reduce, information asymmetry and deadweight losses.

Section 3 provides our arguments that information asymmetry between investors generates deadweight losses and consequently conservatism in financial reporting. It also develops our three testable hypotheses. In addition, in this section we argue that conservative financial reports are likely to generate a more informed capital market than financial reports that include unverifiable information. That implication is, however, not tested in this paper. Section 4 presents the methods used to test our hypotheses and discusses our measure of information asymmetry, the PIN score. The data is described in Section 5. Section 6 reports the test results and Section 7 discusses the result of various robustness tests. Our summary, conclusions and standard-setting implications are given in Section 8.

2. Conservatism in Contracting

The contracting demand for conservatism comes from the asymmetric payoffs to different contracting parties and the parties' asymmetric information. In the literature there are arguments that two types of contracts produce conservative accounting: debt contracts; and earnings-based compensation contracts.

2.1 Debt contracting

For convenience, assume no agency problems between shareholders and the manager, so the manager acts to maximize shareholder wealth. However, assume there are agency problems between the shareholders and the lender.

If, at a debt contract's maturity, the borrowing firm's net assets are above the debt's face value then the lender receives that face value no matter the magnitude of the borrowing firm's net assets. If, however, the firm's net assets are below the loan's face value, the lender receives the value of the net assets only. The lender participates in the lower end of the distribution of net asset outcomes only. On the other hand, the firm's shareholders do not participate in the lower end of the net assets distribution, but if the net assets exceed the debt's face value of the debt, they receive all the excess. The lender and the shareholders are interested in different parts of the return distribution, they have different interests in firm gains versus losses. These asymmetric payoffs combined with limited liability and asymmetric information provide the manager with incentives to take actions that reduce firm value in an attempt to transfer wealth from the lender to the shareholders (Myers, 1977; Smith and Warner, 1979).

There are a number of value-reducing and wealth-transferring managerial actions that debt contracts constrain using accounting numbers from the audited financial reports (see Leftwich, 1983, and Smith and Warner, 1979). Such actions include paying dividends and under-investing, substituting riskier investments for the investments lenders expect to be made and issuing additional debt to dilute the existing lenders claims among others. We use the dividend, under-investment example to illustrate a value-reducing and wealth transferring action, how accounting-based debt contracts restrict such actions and the consequent effect on accounting procedures. The reason is that the dividend example is most easily understood and appears in most debt contracts.

The existence of debt gives the manager/shareholder incentives to forego future positive net present value (NPV) projects and pay a large dividend causing the net assets at the loan's maturity to be less than the face value of the debt. This attempt to transfer wealth to the shareholders at the lender's expense reduces firm value (NPV projects foregone). Lenders anticipate such actions and require debt contract provisions that restrict such transfers. An important restriction is the limitation of dividends to a pool of retained earnings. If that restriction is effective, the manager does not have the alternative of transferring wealth from the lender and will take the positive net present value projects increasing the combined wealth of the parties.

Accounting accruals include some future cash flows in earnings. There is likely to be an asymmetry in the information the manager and the lender have about those future cash flows - the manager likely has more information. To be effective in restricting excessive dividends and preventing a reduction in the combined wealth of the parties, earnings-increasing accruals proposed by the manager (the underlying future cash

flows) have to be verifiable. Otherwise, using his information advantage, the manager can argue for overstated accruals and avoid the dividend restriction (Watts and Zimmerman, 1986, p. 214). On the other hand, again using his information advantage, the manager is likely to withhold information on losses whose accrual would prevent dividends and perhaps cause firm liquidation (eliminating the shareholders' option on future positive earnings).[7] Recognizing all likely losses while requiring verifiability for gains (conservatism) ensures that the earnings pool available for dividends is likely to be a "hard" lower bound estimate of net assets increases and reduces the likelihood of paying total wealth-reducing dividends. Differential verifiability of gains and losses (conservatism) reduces agency costs and increases total firm value (the sum of the values of debt and equity).

Leuz (2001, pp. 172-173) argues that it is not obvious that lenders "want information primarily about economic losses and not also about (potentially offsetting) economic gains" and so demand conservatism. This argument is readily answered. As we have seen the lender's payoffs are asymmetric, he receives no share in the returns above the face value of the debt. If there is a loss that reduces the value of the firm below or equal to the face value of the debt, the lender wants to know that loss so he can exercise his option to exclude the shareholders/manager from running the firm and taking managerial actions that increase the shareholder/manager's wealth at the expense of the lender. An example is substitution of a risky negative NPV investment for a less risky positive firm NPV project (throwing a "Hail Mary" pass).

[7] Kothari, Shu and Wysocki (2006) provide evidence that managers' disclosures are affected by these asymmetric incentives. Managers withhold bad news up to a certain threshold, but leak and reveal good news to investors in a timely fashion.

A real world example of a "Hail Mary" pass is Frederick W. Smith's trip to Las Vegas in 1973 to play the blackjack tables when the firm he founded (FedEx) was in financial difficulties (Business Week, September, 2004). Smith won $27,000 and wired the money back to FedEx. Smith was essentially gambling with his creditors' money: if he lost, it was the creditors' loss; if he won, his firm kept the difference between $27,000 and the amount owing the creditors. *Ex ante*, the gambling project was likely a negative NPV project for the firm in total, but a positive NPV project for the shareholders.

When the value of the firm is above the face value of the debt, the lender is still interested in losses since they may generate insolvency. However, he will be less interested in gains since he receives none of those gains and his interest in those gains will decrease as the value of the firm increases above the face value of debt. If the firm becomes insolvent and the lender takes over the firm becoming the equity holder, his interest in gains will increase.

Note that conservatism reduces information asymmetry between the lender and the manager by restricting the manager's ability to overstate future cash flows (accruals) and his ability to withhold information on losses. Note also that because the parties to private debt contracts are likely to be informed about the agency problems of debt and the effect of alternative accounting methods, it is likely that on average the information provided increases the total value of debt and equity

One might think that a less costly solution to the dividend problem is for the debt agreement to ban all dividend payments. That, however, assumes the firm can reinvest all the increase in its net assets in positive NPV projects. Lack of availability of sufficient such projects, double taxation, the discipline of having to raise capital, and

empire-building managers (the free cash flow problem) suggest such an assumption is unwarranted.

Some accounting researchers argue that conservatism is not necessary to reduce the agency costs of dividends. In particular, Schipper (2005) and Guay and Verrecchia (2006) suggest the dividend problem can be solved using debt contract covenants. Guay and Verrecchia (2006) specifically assert that a covenant adjustment can substitute for conservative accounting in controlling the dividend problem. The adjustment would take the form of a weight less than one being applied uniformly to all gains (verifiable or unverifiable) in calculating earnings available for dividends. It is argued that this adjustment would allow the financial statements to include full timely recognition of (presumably unverifiable) good news and still provide the contracting dividend restrictions that reduce agency costs.

There is evidence consistent with part of the proposed solution. Some extant debt covenant modifications allow only a fraction of gains in the profit pool from which dividends can be paid, while including the full amount of losses into that pool (Beatty, Weber and Yu, 2006). However, there is also good reason to believe the covenant adjustment is not a good, let alone perfect, substitute for conservatism. Conservatism applies a uniform higher verifiability standard to *each* of the firm's gains (enforced on average by auditors). If a gain does not meet the standard it is not included, if it does it is included. For the covenant adjustment to produce the same result as conservatism, the distribution of verifiable and unverifiable gains would have to be exactly in the right proportions to make the fraction work. Management can assert more unverifiable gains and make the covenant nonbinding (see Watts, 2003a, p. 213, footnote 3). Hence, the

covenant is unlikely to be a binding constraint on overstatement of earnings and excess dividend payments. Consistent with our assessment, Beatty, Weber and Yu (2006) find empirically that debt contract covenant modifications and accounting conservatism are *complements*, not *substitutes*.

2.2 Compensation contracting

Another contracting demand for conservatism comes via the manager's earnings-based compensation contract. In that contract the manager's position relative to the shareholders is similar to that of the shareholders relative to the lender in a debt contract. Like the shareholder, often the manager only shares in the returns once a particular return is earned (e.g., Healy, 1985) and so has a greater interest in part of the return distribution. Just as the shareholders may overstate profits to pay a dividend, the manager has incentives to overstate profits so that he can receive and/or increase his compensation under the earnings-based plan. Further, the manager has limited tenure and, like the shareholder, limited liability. Recovery of excess compensation payments after the manager's severance from the firm is very difficult and penalties are limited (see Watts, 2003a, p. 213). This provides incentives for managers to use their asymmetric information on future cash flows to overstate profits and transfer wealth from shareholders (Watts and Zimmerman, 1986, p. 206). Conservatism reduces the manager's ability to use his asymmetric information to overstate profits, make such transfers and, in the process, generate deadweight losses.

2.3 *Variation in information asymmetry and conservatism*

The larger a firm's growth options, the larger the unverifiable future cash flows relative to currently verifiable cash flows. Also, larger growth options suggest a greater information asymmetry between managers and shareholders (Smith and Watts, 1992, pp. 275-276). This implies that conservatism increases as growth options increase because of the increased information asymmetry. The increased conservatism means accounting earnings are less reflective of the effects of manager's actions on firm value as growth options increase. However including the growth options' unverifiable future cash flows in earnings does not obviously increase the total amount of information available and reduce the information asymmetry between managers and shareholders (see Watts, 2003b and Ramanna, 2006). The evidence from the compensation market suggests the sum of shareholders' and managers' wealth is decreased if unverifiable future cash flows are included in accounting earnings and used to evaluate performance. As growth options increase, the use of earnings-based compensation contracts declines (Smith and Watts, 1992, Table 1, p. 270) and the use of stock price-based compensation increases (Smith and Watts, 1992, Table 1, p. 270, and Gaver and Gaver, 1993, Table 8, p. 152).

Increases in relative growth options also limit the ability of accounting-based debt covenants to control the agency problems of debt. Again including unverifiable future cash flows in accounting earnings is unlikely to reduce information asymmetry and solve the problem. Instead as growth options increase, the use of debt declines because of the increasing inability to use accounting to reduce the agency costs of debt and eventually the firm is fully equity-financed (Smith and Watts, 1992).

The lesson from the above examples is that when information asymmetry becomes too large for accounting earnings to provide information useful for restricting agency costs, the market ceases to use accounting and turns to other, non-accounting, solutions. In the compensation case, the contracts use stock prices to restrict agency costs. In the debt case, equity financing is substituted for debt financing. Given this evidence, when accounting cannot reduce information asymmetry between informed and uninformed investors (outside investors and firm insiders), we expect the market to cease to use accounting-based information and turn to other mechanisms, outside of the financial statements, to reduce information asymmetry.

3. Information Demand and Supply and Conservatism

Even in the absence of debt and compensation contracts, there is an agency problem associated with the provision of information to investors in securities markets. The manager has different incentives to the securities investors and can use his information advantage to try to shift wealth from investors to himself (Watts, 2003a, p.215). The manager will manipulate information supplied to investors to try to increase the firm's security prices. Such market price increases yield benefits to the manager, for example more assets to control or the opportunity to trade on his inside information. Even if, on average, the stock and managerial labor markets are efficient and stock prices and managerial compensation reflect the expected losses by outside investors and gains by managers respectively (see below and Manne, 1966), the manager will engage in such activities. Otherwise he suffers the penalties (reduced compensation) without achieving the gains.

Regardless of whether the manager benefits on net, the manipulations generate agency costs just as in contracting. And, just as in contracting, the manager and the other parties to the firm have incentives to reduce those deadweight losses by finding mechanisms to make the information supplied to investors more credible.

As in the contracting case, accounting cannot totally solve the problem. Just as stock-based compensation is substituted for earnings-based compensation, or equity financing is substituted for debt financing, if the information asymmetry is too large for accounting-based solutions to work, we expect to see other information sources substituted for accounting or the securities not publicly traded.

In this section, we first discuss the evidence of information asymmetry's negative effect on security prices and amplify the reasons, then we explain why reporting unverifiable information does not solve the problem even in a non-contractual situation and we advance the hypothesis that conservative accounting improves the total information environment for capital markets. Finally, we develop the three hypotheses that we test empirically.

3.1 Information asymmetry and stock prices

Information asymmetry between security traders affects security prices. This hypothesis goes back at least to Jack Treynor (Bagehot, 1971) who suggests information-based trading affects the spread between bid and ask prices offered by market specialists. The greater the relative private information, the larger the bid-ask spread and the lower the returns to investors without private information, in particular non-insiders, and the higher the equilibrium required returns on the stock (Amihud and Mendelson, 1986).

More recently, Easley and O'Hara (1992) develop a model of abnormal order flow that provides an estimate of the relative amount of private-information-based trading for a given stock: the probability of an information-based trade (PIN). In the model, public information is incorporated in prices without trading while private information is reflected in excess buying or selling pressure. Easley and O'Hara (2004) develop a theoretical model that predicts that securities with greater private information relative to public information have a higher equilibrium required rate of return. Easley, Hvidkjaer and O'Hara (2002) provide empirical evidence consistent with that prediction. The higher the equilibrium return, the lower the stock price.

The equilibrium return effect of informed trading by management and other insiders provides the parties to the firm with incentives to institute governance mechanisms that increase public information and so reduce private information and increase stock price. However, the increased equilibrium return is not the only potential effect of information asymmetry on stock price – there is an effect on the level of the firm's cash flow. Management has incentives to use their private information to manipulate earnings and other financial information and transfer wealth to themselves, causing deadweight losses in the process.

Those transfers can come in various ways. One is manipulation that might increase the stock price. If the market responds to this manipulation, the manager likely has the ability to expand the size of the firm yielding both higher compensation and utility from greater power. A stock price increase itself likely provides increased stock-price-based compensation. The manager can also trade on his private knowledge of the manipulation if the market reacts to the manipulation. Just as in contracting, this

manipulation uses up resources (including management time) and diverts managers from increasing the total wealth available to the parties to the firm. As a result the manipulation generates deadweight losses and reduces the firm's cash flow and its stock price. This effect also provides incentives for all parties to the firm to find ways (e.g., combinations of accounting methods, governance mechanisms, etc.) to reduce management's private information relative to public information.

3.2 Supplying unverifiable information does not address the agency cost problem

Having the management report growth options and their future cash flows might seem one way to reduce the information asymmetry. However, such numbers are usually unverifiable. As we note in the previous section, contracting parties cannot cost-effectively solve the problem of producing useful unverifiable accounting numbers when growth options are large. Instead those parties forgo the use of debt or substitute stock-price-based compensation. It seems unlikely that management and outside shareholders (who are presumably not as informed as the private lenders) could solve the same problem.

Some would argue that the information is not supplied under a contract and therefore there is no requirement for verifiable information that would stand up in a court of law. However, that does not address the question: why should the outside investors believe unverifiable financial information? By definition, auditors cannot verify that unverifiable information, the managers have incentives to manipulate it and absent effective constraints, the stock market will expect manipulation and reduce stock prices.

Managers have difficulty building a reputation to bond themselves. They usually

have a relatively limited tenure to build a reputation and, even if they can build a reputation, there is still an end-game problem (retirement). Compensation contracts partially address the end-game problem by using conservative accounting and deferring payments of bonuses (either cash or stock) to future periods. The contracts also provide for forfeiture of bonuses not yet paid "if and when the compensation committee finds that the manager committed 'any act of omission or commission prejudicial or detrimental to the interests' of the firm" (Smith and Watts, 1982, p. 146).[8]

3.3 Potential effect of conservative accounting on the information environment

If accounting cannot solve the problem of reducing information asymmetry by providing unverifiable information, how does conservative accounting reduce information asymmetry between equity investors? Two potential mechanisms suggest themselves. First, conservative accounting could well provide the best possible non-stock price "*hard*" summary information on current performance for uninformed investors. Second, that hard information provides a benchmark that makes it possible for alternative "soft" sources to generate credible information on unverifiable gains.

Hard information on current performance. Given managers' incentives to overstate unverifiable gains, verifiable gains are likely to be the only "hard" information accounting can supply on gains. On the other hand, generally managers will tend to be reluctant to report less verifiable losses. As we argued earlier, a lower verification standard for losses is likely to elicit information managers are reluctant to provide suggesting on average, that loss information is reliable. The net result from conservative

[8] The internal quote is from Gulf Oil Corporation's Incentive Compensation Plan, May 1, 1973, p.12.

accounting then could be the provision of more information than would be provided by an accounting regime that applies equally strong verification standards to both gains and losses.[9]

Benchmark for "soft" information on current and future performance. Lambert (1996), Ball (2001) and Watts (2006) hypothesize that financial statements discipline other sources of information. Income statement reporting of verifiable current and future cash flow realizations limits management's ability to manipulate financial statements and overstate earnings. The resultant balance sheet net assets are also verifiable and limit managements' ability to manipulate and overstate the resources available to the firm. The cash flow realizations and the accumulation of *verifiable* net assets provide credible evidence on the outcome of previous investments and growth options. That evidence then serves as a benchmark for *competing, multiple* softer information sources. Those sources include both management and sources independent of management. Investors can compare the different sources' predictions to the hard numbers that are eventually realized. This enables them to evaluate the competing sources' reliability.

The ability to use the benchmark to evaluate competing sources allows those information sources to build reputations and credibility if they in turn have governance arrangements such as deferred compensation plans. The reputations bond the sources against issuing intentionally misleading information. Outside information suppliers are not limited to financial reports and disclosures by management, they can also obtain information from multiple other sources such as suppliers, customers, etc. Published

[9] It should be noted that conservative accounting can fulfill a similar disciplining role within the firm where there is also information asymmetry between managers and their supervisors.

verifiable financial accounts provide a mechanism for alternative sources of information to exist and to reduce information asymmetry between equity investors. Further, the competition between sources disciplines both the sources' themselves and the managers of the firms on which they provide information.

3.4 Hypotheses

By their nature growth options (future positive NPV projects) are unverifiable and so generate information asymmetry between managers and outside investors (Smith and Watts, 1992). Accounting manipulation generates additional asymmetry between managers and outside investors. As *total information asymmetry* increases, both growth options and manipulation increase. Increases in growth options are not recorded because they are unverifiable, so as information asymmetry increases fewer gains that are reflected in stock return are reflected in current earnings. Similarly as total information asymmetry increases, from the outside investors' and auditor's perspective, it is likely that more and more projects have a likelihood of loss. The increase in the likelihood of loss follows from the increase in the variance of anticipated returns from the projects resulting from the information asymmetry. The result is that we expect firms with more information asymmetry between informed and uninformed investors to have more losses reflected in current earnings. The net result is that conservatism in the form of the differential recognition of gains and losses (the Basu coefficient) will increase as information asymmetry between informed and uninformed investors increases.

The above reasoning provides us with our first hypothesis:

Hypothesis 1: The more the information asymmetry between informed and

uninformed equity investors, the larger the conservatism in the firm's financial statements.

We test this hypothesis in three parts:

Hypothesis 1a. The greater the information asymmetry between informed and uninformed equity investors, the less gains are reflected in current financial statements;

Hypothesis 1b. The greater the information asymmetry between informed and uninformed equity investors, the more losses are reflected in current financial statements; and

Hypothesis 1c. The greater the information asymmetry between informed and uninformed equity investors, the larger the asymmetric recognition of gains and losses in current financial statements.

Because we argue that information asymmetry generates conservatism, we expect information asymmetry to lead conservatism. This provides our second hypothesis:

Hypothesis 2: Changes in information asymmetry lead conservatism.

This hypothesis is also tested in three parts:

Hypothesis 2a. Changes in the information asymmetry between informed and uninformed equity investors, lead the extent to which gains are reflected in current financial statements;

Hypothesis 2b. Changes in the information asymmetry between informed and uninformed equity investors, lead the extent to which losses are reflected in current financial

statements; and

Hypothesis 2c. Changes in the information asymmetry between informed and uninformed equity investors lead the asymmetric recognition of gains and losses in current financial statements.

The FASB contends that conservatism generates information asymmetry by not informing investors of the future cash flows from growth options (FASB, 2005). Their argument implies that changes in conservatism lead changes in information asymmetry between informed and uninformed equity investors. This provides hypothesis 3:

Hypothesis 3: Conservatism leads changes in information asymmetry.

This FASB argument does not specify what is expected with respect to gains and losses.

Hypotheses 2 and 3 are not alternatives of each other. The null of hypothesis 2 is that changes in information asymmetry follow or are contemporaneous with greater conservatism. The null of hypothesis 3 is that greater conservatism follows or is contemporaneous with changes in information asymmetry.

4. Research Design

4.1 Conservatism Measure

Conservatism can be measured by the Basu coefficient and/or the ratio of the market value of equity to the book value of equity (market-to-book or MB). The Basu coefficient is a measure of the asymmetric verifiability of gains and losses that generates the understatement of net assets. The larger the asymmetric verifiability, the larger is the

understatement of net assets. The MB ratio includes both the understatement of the firm's net assets and unverifiable growth options or rents (see Watts, 2003a and Roychowdhury and Watts, 2006). Given conservatism is the understatement of net assets, both the Basu coefficient, as usually estimated using annual periods, and MB measure conservatism with error.

Annual horizon estimates of the Basu coefficient are affected by firms' failure to record asset write-downs because previous asset value increases were not recorded due to conservatism (the "buffer" problem). This effect causes the annual Basu coefficient to understate the degree of conservatism (Pae, Thornton and Welker, 2005). Roychowdhury and Watts (2006) provide evidence that the buffer problem is significantly reduced by estimating the Basu coefficient using three year estimation intervals. [10]

Unverifiable growth options are included in market value, but book value incorporates those growth options only when acquired. This causes MB to measure the understatement of assets with error (see Holthausen and Watts, 2001, pp. 32-36). Roychowdhury and Watts (2006) argue (and present indirect evidence) that MB measures conservatism with more error than the Basu coefficient when the Basu coefficient is estimated using longer estimation intervals. Their results suggest that in practice neither increases nor decreases in growth options are recorded, consistent with accounting measuring net assets rather than the value of equity. As a result, the Basu coefficient tends not to incorporate changes in growth options and is not significantly affected by the

[10] Roychowdhury and Watts (2006) find that over longer horizons the association between Basu's measure of conservatism and MB flips from negative to positive. While the negative association between the Basu coefficient and MB has been used as evidence against the Basu coefficient capturing conservatism, Roychowdhury and Watts (2006) demonstrate that this negative association is due to relatively greater dependence of short period Basu estimates on the composition of MB at the beginning of the estimation period.

buffer problem when estimated for longer horizons. Consequently, we use the Basu coefficient to measure conservatism in our hypotheses tests. We use MB as a control variable for growth options in multivariate regressions testing whether conservatism is incrementally affected by information asymmetry between equity investors.

Basu (1997) develops a measure of the differential verifiability required for the recognition of accounting gains versus losses, conservatism. Specifically, Basu (1997) estimates the following model:

$$NI = \alpha + \beta_1 DR + \beta_2 RET + \beta_3 RET * DR + \varepsilon \quad (1)$$

where firm and time subscripts are omitted. NI is net income before extraordinary items (Compustat #18) reported in period t divided by beginning of fiscal year market value of equity (Compustat #25*Compustat*#199), RET is the buy and hold return over the fiscal year, and DR is equal to one if RET is negative, zero otherwise.

The Basu model uses returns, RET, as a proxy for news, where positive returns proxy for good news and negative returns proxy for bad news. By allowing differential sensitivity of net income to negative returns, RET*DR, the Basu model captures the differential verifiability required for the recognition of gains versus losses, conservatism. Roychowdhury and Watts (2006) modify the Basu model by cumulating earnings and returns over multiple periods. Following Roychowdhury and Watts, in our empirical tests we use various horizons (one year, two years and three years) to measure conservatism and the influence of information asymmetries among equity market participants on conservatism.

4.2 Information Asymmetry Measure (PIN Score)

To test our hypotheses we require a measure of information asymmetry between informed and uninformed equity investors. Management is part of the informed group. The probability of private information-based trading score (PIN) was designed by Easley

and O'Hara (1992) to measure information asymmetry between informed and uninformed investors in equity markets. As such it fits our purpose of examining the effects of information asymmetry between managers and equity investors. Information asymmetry in debt contracting is between different parties. For example, in debt contracting the important information asymmetry is between managers and the banks that lend privately to firms. It is those contracts that are the most binding and yield most of the debt covenant violations (Sweeney, 1994, p. 290).[11] The banks making the private loans are likely to be more informed than the uninformed equity investor. Similarly, in compensation contracting the important asymmetry would seem to be between the manager and the board of directors.

PIN is a function of the abnormal order flow. The underlying assumption is that public information is directly incorporated in prices because the market maker would move prices to the appropriate level at the time of the information and there would not be any trading activity. Private information generates excess buying or excess selling pressure (abnormal order flow) depending on the nature of the information. On a day in which bad private information arrives there are more sell orders than buy orders, and conversely on good private information day, there are more buy orders than sell orders.

The general intuition behind the PIN measure is that firms that exhibit large deviations from their normal level of order flow most likely have higher levels of trading based on private information which results in deviations from the normal level of order flow. The PIN score is derived from a structural market microstructure model, using individual firm trade data and maximum likelihood estimation to estimate the structural

[11] Public debt does not tend to have as tight debt covenants and tends to free ride off the private debt monitoring.

market microstructure model. Specifically, the PIN score is the arrival rate of information-based orders divided by the arrival rate of all orders, where the arrival rates are parameters from the structural model. It then follows that higher PIN scores represent a higher probability of information based trading, i.e. greater information asymmetries between informed and uninformed investors.

A series of papers have used structural models of trading to estimate the PIN score. These studies investigate issues spanning the pricing of information risk (Easley, Hvidkjaer, and O'Hara 2002, 2004, Botosan and Plumlee, 2004), variation in post earnings announcement drift (Vega, 2006), the effect of disclosure on information asymmetry (Easley, O'Hara, and Paperman 1998, Brown, Hillegeist and Lo, 2004), the sensitivity of investment to stock prices (Chen, Goldstein and Jiang, 2006) and various issues related to market microstructure (Easley, Kiefer, and O'Hara 1996, 1997a, 1997b, Easley, Kiefer, O'Hara, and Paperman, 1996). The studies find evidence consistent with the PIN capturing the level of information asymmetry among informed and uniformed investors. We use firm/year measures of PIN generated by Easley, Hyvidkjaer and O'Hara (2004) for the period 1983-2001. [12]

4.3 Primary Empirical Specification

To test hypotheses 1a and 1b we estimate equation (2) for the positive and negative return samples separately:

$$NI = \alpha + \beta_1 RET + \beta_2 PIN + \beta_3 PIN * RET + \varepsilon \qquad (2)$$

where firm and time subscripts are omitted. PIN is the probability of an information based trade measured using the trading data over the fiscal year. All variables are as previously defined.

[12] We thank Soeren Hvidkjaer for making the PIN scores available on his website, http://www.smith.umd.edu/faculty/hvidkjaer/.

Hypothesis 1a predicts the coefficient of PIN*RET (β_3) will be negative and significant for the positive return sample estimations while hypothesis 1b predicts coefficient β_3 will be positive and significant for the negative return sample estimations.

We estimate equation (3) to test hypotheses 1c:

$$NI = \alpha + \beta_1 DR + \beta_2 RET + \beta_3 RET * DR + \beta_4 PIN + \beta_5 PIN * DR + \beta_6 PIN * RET + \beta_7 PIN * RET * DR + \varepsilon \quad (3)$$

where firm and time subscripts are omitted. All variables are as previously defined.[13] Hypothesis 1c predicts the coefficient of PIN*RET*DR (β_7) will be positive and significant indicating that as the level of information asymmetry between informed and uniformed investors increases (higher PIN scores), the asymmetric recognition of gains and losses in current financial statements increases.

To conduct our main tests of our second and third hypotheses we incorporate the change in the PIN score at different time intervals t-1, t and t+1 into equation (1) as follows:

$$\begin{aligned} NI_t = {} & \alpha + \beta_1 DR_t + \beta_2 RET_t + \beta_3 RET_t * DR_t + \beta_4 \Delta PIN_{t+X} + \beta_5 \Delta PIN_{t+X} * DR_t \\ & + \beta_6 \Delta PIN_{t+X} * RET_t + \beta_7 \Delta PIN_{t+X} * RET_t * DR_t + \beta_8 PIN_{t-1+X} \\ & + \beta_9 PIN_{t-1+X} * DR_t + \beta_{10} PIN_{t-1+X} * RET_t + \beta_{11} PIN_{t-1+X} * RET_t * DR_t \\ & + \varepsilon_t \end{aligned} \quad (4)$$

where firm subscripts are omitted. ΔPIN_{t+X} is equal to the change in the PIN score over period t+X, where X is equal to one of the following -1, 0, 1. All other variables are as previously defined.

In equation (4) we vary the timing of the change in the PIN score to test whether:

[13] We present the results using the year t PIN score in each specification, allowing us to use the same sample of firms for one, two and three year specification. The year t PIN is estimated using the trading that took place during fiscal year t. In untabled analysis we match the PIN lag with the estimation period, i.e. the two (three) year estimation with the average PIN over the two (three) year period. The signs and statistical significance of the coefficients in this analysis are similar to those reported in the tables.

(1) changes in the level of information asymmetry between informed and uninformed equity investors lead the asymmetric recognition of gains and losses in current financial statements (hypothesis 2c); and

(2) conservatism leads changes in the level of information asymmetry between informed and uninformed investors (hypothesis 3).

The structure of the cross-sectional estimation of the Basu coefficient makes the estimation of changes in conservatism difficult: the differential reflection of good news (positive returns) and bad news (negative returns) in income is a function of the sign of the news in the period. That dichotomy does not translate well into changes in news and conservatism. Instead of estimating the relation between changes in conservatism (the Basu coefficient) and changes in information asymmetry (PIN) directly we estimate the time-series properties of annual PIN scores and use those properties to specify equation (4).

The time series of annual PIN scores is well described by a first order moving average in first differences. The correlations of the first differences in PIN are -.43, .00 and -.02 for lags 1, 2 and 3 respectively. PIN changes consist of the shock to the current period PIN and a fraction of the shock to the preceding period's PIN. Consequently, we split the annual PIN score into two parts: the PIN level for the previous year and the change in PIN for the year. We expect the previous year's PIN level to pick up the reversal of last year's shock in the current year. That leaves the PIN change (ΔPIN) to pick up the current year's shock to PIN and measure the timing of changes in information asymmetry.

If changes in information asymmetry lead conservatism (hypothesis 2c), we expect the coefficient of $\Delta PIN_{t-1}*RET_t*DR_t$ (β_7) to be positive and significant. If changes in information asymmetry are contemporaneous with changes in conservatism, we expect the coefficient of $\Delta PIN_t*RET_t*DR_t$ (β_7) to be positive and significant. Finally, if changes in conservatism lead changes in information asymmetry (hypothesis 3), we expect the coefficient of $\Delta PIN_{t+1}*RET_t*DR_t$ (β_7) to be positive and significant.

To test whether changes in information asymmetry lead the extent to which:

a) gains are reflected in current financial statements (hypothesis 2a); and

b) losses are reflected in current financial statements (hypothesis 2b),

we use the following specification for the positive and negative return samples separately:

$$NI_t = \alpha + \beta_1 RET_t + \beta_2 \Delta PIN_{t+X} + \beta_3 \Delta PIN_{t+X} * RET_t + \beta_4 PIN_{t-1+X} + \beta_6 PIN_{t-1+X} * RET_t + \varepsilon_t \quad (5)$$

where firm subscripts are omitted. All variables are as previously defined. Hypothesis 2a predicts the coefficient of $\Delta PIN_{t-1}*RET_t$ (β_3) to be negative and significant for the positive return sample estimations, while hypothesis 2b predicts coefficient β_3 to be positive and significant for the negative return sample estimations.

It is important to realize that the effect of a change in information asymmetry on conservatism can be both first-order and timely. If a firm begins investing significantly in growth options or acquires another firm that has significant growth options, the evidence in finance on corporate policies (discussed in section 2.3) suggests the *increase in information asymmetry* would be significant. The firm's stock return would depend much more on changes in those growth options' value and the extent to which both good and bad news is reflected in earnings would change in a timely fashion. As soon as the

investment is made, less relative good news in stock returns would be related to current cash flows and *β_3 would tend to be negative for the positive returns sample*. The increase in information asymmetry would cause less relative bad news to be related to current cash flows, but more write-downs of firm-specific assets whose value is dependent on the projects' success. This would tend to produce *a positive β_3 for the negative returns sample*.

If a firm divests itself of a growth subsidiary or its investments begin to mature and the ratio of current cash flows to expected future cash flows increase, we expect *information asymmetry to decline* and current earnings to reflect relatively more of any good news on the firm in a timely fashion. The estimate of *the β_3 coefficient in the positive returns regression should be negative*. Likewise, with less growth options and less information asymmetry we expect fewer firm-specific assets and fewer write-downs with bad news, producing *a positive β_3 for the negative returns sample.*

Note that preceding analysis does not allow for changes in the capitalized value of rents (goodwill). In doing so we rely on the arguments and evidence in Roychowdhury and Watts (2006) that neither increases nor decreases in growth options are recorded, at least in our sample period, which is prior to the SFAS 142 changes in the standards for goodwill impairment. After SFAS 142, goodwill impairments increase, but are still relatively infrequent in situations that imply goodwill should be impaired. Ramanna and Watts (2006) report that among firms with goodwill and MB values that fell from greater than one to less than one in a given year over the 2002-2005 period, only 22% took an impairment in the year of the drop. And, among those firms whose MB remained below one for two years only 26% took one or more impairments.

Also note that we have not discussed the effect of management manipulation of earnings on our predicted results. We argue that the ability to manipulate varies positively with the existence of growth options and that conservatism is an equilibrium mechanism for reducing that manipulation. For the empirical work we assume that in equilibrium the information asymmetry remaining after the effects of conservatism varies directly with the information asymmetry associated with information before conservatism. In other words, the effect of conservatism on information asymmetry is proportional to the pre-existing information asymmetry.

5. Sample and Descriptive Statistics

We restrict our sample to the NYSE and AMEX stocks with December fiscal year ends over the 1983-2001 time period. The PIN scores are available annually for the NYSE and AMEX sample. As discussed in Easley et al. (2004), the market structures of the NYSE and AMEX rely on specialists and so most closely resemble the structural model used to estimate the PIN score. We require firms to have December fiscal year ends because the PIN scores are estimated using calendar year trade data over the 1983 to 2001 period. [14] Thus the PIN score used in our cross sectional models is the PIN score estimated over calendar year t. We require firms to have the PIN score and sufficient CRSP and COMPUSTAT data to be included in our empirical tests.

Table 1 displays the descriptive statistics and the variables' correlation matrix for our sample of 20,389 firm year observations for 1983 to 2001. Panel A reports the

[14] Our results are not sensitive to using only December fiscal year end firms.

sample descriptive statistics. [15] The mean (median) PIN is 0.195 (0.182) consistent with the mean PIN of 0.208 reported in Easley et al. (2004). The average sample firm has a market-to-book ratio (MB, (Compustat #25*Compustat #199)/Compustat #60) of 2.243 and leverage (LEV, (Compustat #9 + Compustat #34)/Compustat #6) of 0.267. In general our sample is comprised of relatively large firms: the sample mean (median) market value of equity is $2,888 million ($529 million). Finally, both the mean and median values of all the scaled net income before extraordinary items (NI) and buy and hold return (RET) variables are positive indicating that, in general, our sample firms are profitable and have experienced positive returns.

Panel B of Table 1 reports the pairwise correlations among the variables, where the upper right hand portion displays the Pearson product-moment correlations, and the lower left hand portion displays the Spearman rank-order correlations. To facilitate discussion, we focus on the Pearson correlations, but note that the Spearman rank order correlations are generally consistent with the Pearson results. The PIN score is significantly negatively correlated with MB, LEV, MKTCAP, all the scaled net income variables and the three year buy and hold return. The negative relation between MB and PIN is likely driven by the fact that our sample is comprised of relatively large firms. The negative correlations between PIN and LEV (-0.060) and PIN and MKTCAP (-0.301) are consistent with at least a portion of the information asymmetry captured by the PIN being due to variation in firms' investment opportunity sets (Smith and Watts 1992). All of the scaled net income and return measures are positively correlated with

[15] To reduce the influence of extreme observations we winsorize, all the NI and RET variables at the first and 99th percentile values.

each other indicating that accounting earnings capture at least a portion of the information reflected in returns.

An examination of the empirical relation between PIN and corporate policies provides useful information for this study. First, to the extent that PIN is associated with corporate policies and measures of growth options in the directions predicted by extant studies, we can gain more confidence that PIN is measuring information asymmetries. Second, understanding the relation between information asymmetries and policies that involve contracts (debt and compensation policies) that generate conservatism can help identify the marginal effect of information asymmetry between equity investors on conservatism.

While PIN scores are designed to measure information asymmetry between equity investors, it is likely that they are also related to information asymmetries between banks and managers and between corporate boards and managers. As we have argued, growth options affect all three asymmetries. In turn, this suggests that PIN will be related to corporate financial policy (leverage) and management compensation policy (use of earnings-based compensation and stock-price-based compensation). Growth options are also likely to affect dividend policy because they reduce the free cash flow problems associated with assets-in-place (Jensen, 1986). [16]

We compare the variation of PIN scores with MB and corporate policies where data are readily available to us: leverage (LEV); dividend yield (DIVYLD, common dividends plus repurchases/market value of equity) and option compensation as a percent

[16] A number of studies have found that corporate financial, dividend and compensation policies vary with growth options as proxied by the market value of the firm to the book value of the firm (e.g., Smith and Watts, 1992, Gaver and Gaver, 1993, and Barclay, Smith and Watts, 1995). These results suggest that corporate policies are likely to be related to PIN.

of total compensation (%OPTIONS, value of options granted to the CEO/total value of compensation paid to the CEO). Leverage is expected to decline with growth options and consequently with the PIN score. Dividend yield is also expected to decline with the PIN score because the greater the growth options, the less cost to restricting dividends and the less the free cash flow problem. Options as a percentage of total compensation is expected to increase with the PIN score because earnings will reflect the effect of the manager's actions less as growth options increase leading to relatively more non-earnings based compensation. MB is expected to vary positively with PIN score, to the extent that it measures growth options. Firm size is positively correlated with the relative amount of public information which reduces information asymmetry between investors generating a negative association with the PIN.

To provide an overview of the association between PIN and the policy variables we regress PIN on the policy variables plus MB and SIZE (log of the market value of equity). Panel C of Table 1 presents the results for two Fama MacBeth (1973) regressions estimated over two time periods (1983-2001 and 1992-2001): one including, and one excluding, %OPTIONS as an independent variable.

All the estimated coefficients of the independent variables in Panel C have the predicted sign and are significant at least at the 0.08 level (one-sided test). The coefficient of MB is positive and significant at the 0.07 level (one-sided test). This is consistent with market-to-book ratio reflecting growth options and the information asymmetries associated with them. The negative sign of the coefficient of SIZE is significant at the 0.01 level (one-sided test) consistent with extant empirical evidence that there is relatively more public information for larger firms (Banz 1981). The coefficient

on %OPTIONS positive and significant at the 0.08 (one-sided test), consistent with firm relying less on earnings based compensation as growth options increase. These results combined with the significance and predicted signs on the policy coefficients give us more assurance that PIN is measuring information asymmetry.

The negative association between LEV and PIN likely comes from two sources. First, increases in growth options are not financed by debt, thus reducing leverage (see our earlier discussion about the inability of debt covenants to handle growth options) and, second, those increases reduce the optimal total level of firm debt (Barclay, Smith and Morellec, 2006). Leverage proxies for the firm's relative amount of non-growth option investments and since only such investments generate debt capacity, leverage will also measure the debt contracting demand for conservatism. This helps us distinguish the sources of conservatism in section 6.

6. Results

6.1 PIN scores and Conservatism

H1 predicts that higher PIN scores are associated with greater asymmetric recognition of gains and losses in the current financial statements. Table 2 reports the Fama-MacBeth (1973) results testing our first hypotheses. We test our first hypotheses using three time periods labeled, One Year, Two Year and Three Year. For the one year tests we measure earnings and returns over the fiscal year. In the two (three) year tests we measure earnings and returns cumulatively over the current and the prior one (two) fiscal years, consistent with the Roychowdhury and Watts (2006).

Panel A of Table 2 estimates equation (2) for the positive return sample, cumulating earnings and returns over the three time intervals. Consistent with H1a, the higher the PIN score, the less gains reflected in the current financial statements, the coefficient on the PIN*RET term is negative in each of the three horizons. However, the coefficient on the PIN*RET term is only significant in the two and three year specifications, at the 0.06 level or better one-sided. Panel B estimates equation (2) for the negative return sample. Consistent with H1b, the higher the PIN score the more losses reflected in the current financial statements, the coefficient on the PIN*RET interaction term is positive and significant, at the 0.10 level or better one-side, for all three horizons.

Panel C of Table 2 estimates equation (3). For brevity we do not discuss the coefficient on RET and RET*DR, but note that the signs and statistical significance are similar to those found in prior research. The coefficient on the two-way interaction between PIN*RET is insignificant in the one year horizon specification and negative and significant at the 0.04 level in the two and three year specifications, indicating that firms with higher PIN scores incorporate less good news into earnings. Turning to the three-way interaction term, PIN*RET*DR, the coefficient is positive and significant at the 0.09 level or better one-sided, for all three horizons. These results indicate that as the level of information asymmetry between informed and uninformed investors' increases, earnings exhibit greater conservatism, consistent with H1c.

6.2 Control for contracting and other sources of conservatism

Just as Smith and Watts (1992, pp. 269-270) do not specify the partial effects of different factors on corporate policies or the interdependencies among those factors, we do not specify any interdependencies among or partial effects of the various sources of

conservatism The reason is the same: sorting out these various effects requires specification of a structural model that takes account of these interdependencies and errors in specifying those relations are likely to be large and introduce bias into the empirical analysis. At this stage of the development of the conservatism literature, we believe documentation of robust empirical relations between policy parameters (including conservatism) and exogenous variables (we assume the investment opportunity set is exogenous) is likely to better serve progress in understanding conservatism.

To test the robustness of the relation between information asymmetry between informed and uninformed equity investors and conservatism, we control for a number of variables known to influence conservatism. The information asymmetry effect survives all those tests even though those other variables are related to information asymmetry and could potentially eliminate its effect.

Roychowdhury and Watts (2006) demonstrate the importance, both empirically and theoretically, of controlling for the composition of equity values through the use of the MB ratio in conservatism tests. MB reflects both net asset conservatism and growth options. We expect the greater a firm's growth options, the greater is the information asymmetry between equity investors in the firm. Including MB as a control will tend to reduce the likelihood of finding a marginal effect of the PIN measure on conservatism. Nevertheless, we expect that conservatism will vary with PIN even after controlling for MB's effect on conservatism because it is a more direct measure of the information asymmetry among equity investors.

We use LEV to proxy for the debt contract demand for conservatism. Our first test of the proposition that information asymmetry between informed and uninformed

equity investors generates conservatism (hypothesis 1) that *controls* for both MB and contracting uses LEV as the only control for contracting.

There are a couple of reasons to believe that control will be reasonable:

1. Accounting history is consistent with debt contracting being a *major* contracting influence on conservatism (Watts, 1993 and 2006); and
2. The extant evidence is consistent with accounting's inability to reflect growth options driving the reduction in the use of both debt and accounting-based compensation contracts. Consequently, LEV could well proxy for both contracting uses of accounting.

Note that like MB, LEV varies with growth options. Since growth options create information asymmetries, the inclusion of both these variables generates a strong test for the effect of information asymmetry among equity investors on conservatism.

Table 3 presents the results from Fama-MacBeth (1973) estimations of the following equations:

$$NI = \alpha + \beta_1 RET + \beta_2 MB + \beta_3 MB * RET + \beta_4 LEV + \beta_5 LEV * RET + \beta_6 PIN + \beta_7 PIN * RET + \varepsilon \quad (6)$$

and

$$NI = \alpha + \beta_1 DR + \beta_2 RET + \beta_3 RET * DR + \beta_4 MB_t + \beta_5 MB * DR + \beta_6 MB * RET + \beta_7 MB * RET * DR + \beta_8 LEV + \beta_9 LEV * DR + \beta_{10} LEV * RET + \beta_{11} LEV * RET * DR + \beta_{12} PIN + \beta_{13} PIN * DR + \beta_{14} PIN * RET + \beta_{15} PIN * RET * DR + \varepsilon \quad (7)$$

where all variables are as previously defined.

Panels A and B of Table 3 estimate equation (6) for the positive and negative return samples respectively. In both samples the coefficients on the MB*RET and LEV*RET terms are significant in a least two of the three specifications, indicating that both the

market-to-book ratio and debt contracting influence the extent to which good and bad news are reflected in the financial statements. Consistent with the results reported in Panels A and B of Table 2 the coefficients on PIN*RET terms are negative for the positive returns sample and positive for the negative returns sample, lending further support to H1a and H1b. For the negative returns sample β_7 is positive and significant at the 0.05 level or better one-side, for all three horizons, whereas for the positive returns sample β_7 is only significant at conventional levels for the two and three year horizons.

Panel C of Table 3 presents the results from estimation of equation (7). The results document that the MB ratio exhibits a negative association with conservatism at for all three horizons. Consistent with the findings of Frankel and Roychowdhury (2006) firms with higher leverage report more conservative earnings as evidenced by the positive and significant coefficient on the LEV*RET*DR interaction term in each of the horizons. These results are consistent with the existence of debt contracting based demands for conservatism.

Turning to the PIN score interactions, the coefficient on the PIN*RET term is negative and significant at the 0.05 level or better, for the two and three year horizons and negative but not significant in the one year horizon. Moreover, the PIN*RET*DR interaction term continues to be positive and significant at the 0.05 level or better one-sided in all three horizons, consistent with H1c. Overall the combined evidence reported in Table 3 is consistent with earnings incorporating less information about gains and more information about losses as information asymmetry between equity investors increases. The combination of these results indicates that information asymmetries

between informed and uninformed investors are an important determinant of conservatism.

Table 4 reports the results from estimating equation (3) for low and high leverage groups, where and low and high are defined as the lowest (highest) quartile of firms ranked by LEV. The motivation for this analysis is to provide a more direct test of the existence of a demand for conservatism when the debt contracting demand is limited. The average leverage for the low (high) leverage group is 0.05 (0.50) indicating that these two groups differ substantially in their use of debt and debt holder demand for conservatism. Across both the low and high leverage groups the coefficient on the PIN*RET*DR interaction term is positive and significant at the 0.08 level or better one-sided for all the estimations except the one year horizon in the high leverage group where PIN*RET*DR is not significant at conventional levels. The PIN*RET interaction term is only significant for the one-year horizon in the high leverage group, -0.386, p-value 0.05 one-side. The results on the PIN*RET*DR coefficient in the low leverage group is consistent with there being a demand for conservatism other than the debt contracting demand. The nature of the PIN variable implies the result is consistent with information asymmetry between equity investors being the source of that demand.

While debt contracts are the most widely accepted source of conservatism, Beaver (1993) and Watts (1993) suggest that litigation may also be a source of conservatism since litigation is more likely when the financial statements are overstated. Consistent with litigation being a source of conservatism, Basu (1997) finds that earnings are more conservative in periods where auditors' legal liability increases. Shu (2000) develops a measure of auditor litigation risk by examining the firm specific factors associated with

an increase in the likelihood of auditor litigation. We measure auditor litigation risk using the parameters from Shu's logit model to calculate the probability of auditor litigation for each firm-year observation in our sample. We examine whether our results on the PIN score are robust to controlling for the litigation based demands for conservatism using the following equation:

$$\begin{aligned} NI = {} & \alpha + \beta_1 DR + \beta_2 RET + \beta_3 RET * DR + \beta_4 MB + \beta_5 MB * DR + \beta_6 MB * RET \\ & + \beta_7 MB * RET * DR + \beta_8 LEV + \beta_9 LEV * DR + \beta_{10} LEV * RET \\ & + \beta_{11} LEV * RET * DR + \beta_{12} PROBLIT + \beta_{13} PROBLIT * DR \\ & + \beta_{14} PROBLIT * RET + \beta_{15} PROBLIT * RET * DR + \beta_{16} PIN + \beta_{17} PIN * DR \\ & + \beta_{18} PIN * RET + \beta_{19} PIN * RET * DR + \varepsilon \end{aligned} \quad (8)$$

Where PROBLIT is the probability of auditor litigation, where the probabilities are calculated using the parameters from Table 3 of Shu (2000). All other variables are as previously defined.

Table 5 presents the results from estimating equation (8). The sample sizes used to estimate equation (8) are somewhat smaller (average n=872) than those used in the previous tests due to the additional data required for Shu's measure. Consistent with litigation being a determinant of conservatism the coefficient on the PROBLIT*RET*DR interaction term is positive and significant at the 0.01 level or better one-side in each of the three specifications. In addition the coefficient on the PROBLIT*RET is negative and significant in two of the three specifications.

After controlling for the influence of the market-to-book ratio, debt contracts, and litigation on conservatism we continue to find that firms with higher PIN scores report more conservative earnings. In each of the three horizons the coefficient on the three way interaction, PIN*RET*DR, is positive and significant at the 0.06 level or better one-sided. The results on the PIN*RET term are more mixed. For the one year horizon the coefficient on PIN*RET is positive and significant at the 0.08 level one-sided,

inconsistent with our first hypothesis. However, the coefficient on the PIN*RET interaction term is negative in two of the three specifications, however only significant at conventional levels in the three year horizon.

The significance of the coefficient of PIN*RET*DR (the effect of information asymmetry between equity investors) is a strong result given that MB, leverage and litigation are all associated with information asymmetry. Since PIN is the only direct measure of the asymmetry between informed and uninformed equity investors included in the regression, we interpret the result as confirmation that equity investor asymmetry affects conservatism. It is also important to note the strong significance of the coefficients of LEV*RET*DR and PROBLIT*RET*DR in all three estimations. These last two results are consistent with the extant evidence on the effects of both debt contracting and litigation on conservatism.

As discussed in Section 2, earnings based compensation contracts may generate a demand for conservatism. We attempt to control for the influence of compensation contracting on conservatism by including %OPTIONS in equation (7). [17] We expect firms paying their CEO's with relatively more stock options to use relatively less earnings-based compensation. [18] In untabulated analysis, we collect compensation data from S&P's ExecuComp over the 1992 to 2001 time period, further reducing the sample sizes used in this analysis to an average of 627 observations per year. We first included only the main terms (DR, RET, and RET*DR) and the %OPTIONS terms in equation (7)

[17] We investigated alternative proxies for the compensation based demands for conservatism, however were able to find little evidence of these alternative variables influencing the Basu coefficient.
[18] The evidence presented in section 5 indicates that %OPTIONS is a noisy proxy, at best, for the compensation based demands for conservatism. An alternative hypothesis for the results in panel C of Table 1 is that %OPTIONS is a good proxy for earnings-based compensation, but earnings-based compensation does not demand conservatism.

to investigate the influence of %OPTIONS on conservatism. In both the one and two year horizons we find a negative and significant coefficient on the three way interaction, %OPTIONS*RET*DR, at the 0.04 level or better one-sided. This result is consistent with greater earnings-based compensation increasing the demand for conservatism. When estimating the full model none of the PIN*RET interaction terms are significant in the %OPTIONS sample. However, the coefficient on the PIN*RET*DR term is positive and significant at the 0.03 level or better one-sided, in the one, two, and three year horizons.

Overall, the results reported in Tables 2, 3, 4, and 5 lend support to the first hypothesis and indicate that both debt and equity investors demand conservatism as a means of mitigating agency cost. The combined results indicate the affect of information asymmetry on conservatism cannot be attributed to other potential sources of conservatism, specifically debt contracts, compensation contracts, and litigation.

6.3 Changes in PIN scores and Conservatism

Table 6 presents the results testing the second and third hypotheses using equations (4) and (5). The time period and samples used for the Fama-MacBeth regressions are smaller than those used in the previous tables due to the requirement that firms have prior (t-1), current (t) and future (t+1) changes in PIN scores, specifically we estimate equations (4) and (5) using an average of 940 observations over the 1985-2000 time period.[19]

[19] Recall that we have PIN scores as of December 31 for the period 1983-2001. In our change test we use the change in the PIN score over the year, limiting our analysis to the 1985 to 2000 time period, i.e. in the first year the lag change in PIN is the 1984 PIN minus 1983 PIN and in our last year the lead change in PIN is the 2001 PIN minus the 2000 PIN.

Panels A and B of Table 6 report the results of estimating equation (5) for the positive and negative returns samples respectively. We first discuss the coefficients on non-ΔPIN score terms. The RET coefficient is positive in all six specifications and significant in all but one of the specifications, the positive return prior period change in PIN specification. The coefficient on the PIN_{t-1+x}*RET_t interaction term is insignificant in all three of the positive return specifications and positive and significant in two of the three negative return sample estimations.

Consistent with H2a, changes in PIN lead the extent to which gains are reflected in the financial statements, the coefficient on the ΔPIN_{t-1}*RET_t term is -0.18, significant at the 0.07 level one-sided. In both the contemporaneous and future period specifications the coefficient on the ΔPIN_{t+x}*RET_t term is insignificant. For the negative return sample, the coefficient on the ΔPIN_{t+x}*RET_t term is positive and significant at the 0.09 level or better one-sided for the prior and contemporaneous period change in PIN estimations. These results suggest that as information asymmetries increase more losses are reflected in the current financial statements indicating that changes in information asymmetry lead the extent to which losses are reflected in earnings, consistent with H2b. In addition, the coefficient on the ΔPIN_{t+x}*RET_t term for the future period change in PIN specification is insignificant.

Panel C of Table 6 presents the results from estimating equation (4). In all three estimations the RET coefficient is positive, but only significant at conventional levels for the contemporaneous and future changes in PIN specifications. Similar to the RET term the RET*DR term is positive in all three estimations but only significant in the prior and contemporaneous changes in pin specifications. The differences in the magnitude and

significance of the RET and RET*DR terms across the specifications is due to the difference in effects of the beginning of change period PIN scores across specification on contemporaneous conservatism.

The first two columns of Panel C present the results for the ΔPIN_{t-1} specification, where the change in the PIN is measured over the year prior to the conservatism year and the PIN score is as of the beginning of the t-1 change period. The coefficient on the ΔPIN_{t-1}*RET interaction term is negative and significant, at the 0.08 level one-sided. This result suggests that when information asymmetries between informed and uninformed equity investors increase, earnings incorporate less good news in the subsequent period. The coefficient on the ΔPIN_{t-1}*RET*DR (β_7) is 0.650, significant at the 0.03 level one-sided, indicating that increases in information asymmetry in the previous year are associated with greater conservatism in the contemporaneous year, consistent with the H2c. None of the t-2 PIN score terms are significant suggesting that the change in the PIN score is subsuming the effect of the prior period PIN score on conservatism.

Columns three and four in Panel C present the results from estimating equation (4) with the contemporaneous change in PIN. We expect contemporaneous increases in information asymmetry to be associated with increased conservatism due to the fact that increases in information asymmetries most likely occur throughout the year and thus may affect the contemporaneous level of conservatism. Consistent our prediction, the ΔPIN_t*RET*DR coefficient (β_7) is 0.965, significant at the 0.01 level one-sided, indicating that conservatism increases as information asymmetry between informed and uniformed investors increases. The contemporaneous results differ from the prior period

change in PIN results in that the ΔPIN_t*RET term is no longer significant and the PIN*RET*DR, the t-1 level of PIN interaction term, term is positive and significant.

The last two columns of Panel C test the third hypothesis by examining the influence of future PIN changes on contemporaneous conservatism. We find no support for the third hypothesis that greater conservatism leads to increases in information asymmetry. None of the coefficients on future change in PIN interaction terms are significant, inconsistent with greater conservatism in the contemporaneous period resulting in increases in information asymmetries in future periods. However, consistent with the results reported in Table 2 we find that the PIN*RET*DR term is positive and significant at the 0.06 level.

The results reported in Table 6 are inconsistent with recent moves by the FASB toward fair value accounting, away from conservatism, in an effort to reduce information asymmetry among equity market participants. An implication of the combined results reported in Table 6 is that moving towards fair value based accounting is likely to *increase* the level of *information asymmetry* among equity market participants.

As discussed in section 4 the structure of the Basu model makes the estimation of changes in conservatism difficult. While we use the specifications presented in Table 6 as our main tests of hypothesis 2 and 3, we conduct an additional series of tests to provide further evidence on hypotheses 2 and 3, presented in Table 7. The tests examine the timing of changes in conservatism before, during, and after the change in information asymmetry.

We first group firms into quartiles based on the change in the PIN score over the fiscal year (i.e. PIN_t-PIN_{t-1}). We then estimate equation (1), the Basu model, for each of

the quartiles for fiscal year's t-2, t-1, t, and t+1, providing an estimate of the level of conservatism for each of the quartiles in years surrounding the change in information asymmetry. We then examine the change in conservatism before, during and after the change in PIN.

Panel A of Table 7 presents the average change in PIN for each of the quartiles as well as the Fama-MacBeth Basu coefficients (the β_3 coefficient from equation (1)) for each of the quartiles and reporting periods. For the firms in the first (fourth) quartile the average ΔPIN_t is -0.073 (0.069). In unreported descriptive statistics we document that the average PIN is highest for the firms in the first quintile, consistent with the time series properties of the PIN discussed in section 4. In general, conservatism is increasing over time as indicated by the general increase in the β_3 coefficient from t-2 to t+1 for each of the groups.

Panel B of Table 7 presents our first test of hypothesis 2 and 3. Specifically, within each change quartile we take the change in the Basu coefficient within the group for the pre change period ($\beta_{3,t-1}$ minus $\beta_{3,t-2}$), the concurrent period ($\beta_{3,t}$ minus $\beta_{3,t-1}$) and the post change period ($\beta_{3,t+1}$ minus $\beta_{3,t}$). The second hypothesis, changes in information asymmetry lead conservatism, predicts that conservatism increases (decrease) in the post change period for the sample of firms experiencing an increase (decrease) in information asymmetry in the contemporaneous period. The prediction from the third hypothesis, conservatism leads changes in information asymmetry, is that conservatism increases (decreases) in the pre change period for the sample of firms experiencing an increase (decrease) in information asymmetry in the contemporaneous period.

Panel B present the time series average of the coefficient differences and the p-value testing whether this difference is different from zero. The results reported in the first column of panel B provide no evidence consistent with the third hypothesis. The second quartile is the only group where the change in conservatism is significant. For this quartile conservatism increased by 0.09, p-value of 0.08 one sided, opposite of what is expected since the mean change in PIN for this group is negative. The results reported in the second column examine the change in conservatism during the change in PIN period, i.e. the contemporaneous change period difference. While hypotheses 2 and 3 do not provide a unique prediction for the change in conservatism over this period we examine the contemporaneous period for completeness. The first and third quintiles exhibit a significant increase in conservatism, 0.128 and 0.184 respectively. Thus for the sample of firms with the largest PIN decrease (the first quartile), conservatism is increasing during the period over which information asymmetries are declining.

The third column of panel B provides some evidence consistent with the second hypothesis. Specifically, there is a significant increase in conservatism following the change in information asymmetry for in both the third and the fourth quartiles, the groups where information asymmetries have increased. However, somewhat inconsistent with the second hypothesis conservatism does not decline in the first quartile and actually increases significantly in the second quartile.

Finally, panel C of Table 7 examines the across group differences in each of the three periods. Specifically, we focus on the two extreme quartiles, the fourth and the first, and test whether the change in conservatism across the quartiles is significantly different from zero. There is no difference in the change in conservatism across the

groups in for the pre change period. In the concurrent and post change period there is a significant difference in the change in conservatism between the fourth and first quartile. Conservatism increased significantly more in the first quartile relative to the fourth quartiles as evidence by the -0.089 difference in difference, p-value 0.08 one sided. More relevant to hypothesis 2 and 3, in the post change period the change in conservatism in the fourth quartile is significantly larger than the change in conservatism in the first quartile, difference in difference of 0.16, p-value 0.06 one sided. Overall the results presented in Table 8 are more consistent with the second hypothesis, changes in information asymmetry lead conservatism.

Together the results presented in Tables 3, 4, 5, 6 and 7 provide evidence consistent with the first and second hypotheses. Specifically, we find that higher levels of information asymmetry between informed and uninformed equity investors are associated with more conservative earnings and that increases in information asymmetry lead to greater conservatism. The combined results are consistent with our conjecture that conservatism is an equilibrium response by equity market participants to reduce agency cost arising from information asymmetry among equity market participants.

7. Additional Analysis

7.1 Firm Size

As a final robustness test we repeat the analysis presented in Table 5 including firm size and its interaction terms. We measure firm size as the natural log of firm's market value of equity at the end of the estimation period. There are at least three potential reasons to expect firm size to be related to conservatism: (1) political costs; (2)

the effect of aggregating income and returns across multiple segments/projects; and (3) information asymmetry. The political cost hypothesis predicts that larger firms will report more conservative earnings whereas the income aggregation and information asymmetry hypotheses predict that larger firms will report less conservative earnings.

Appendix A reports the results of this additional analysis, we find that larger firms are less conservative, consistent with income aggregation and information asymmetry. The inclusion of firm size and size interaction terms in the regression reduces the effect of the PIN on conservatism. In the one, two, and three year specifications, the coefficient on the three way interaction term, PIN*RET*DR, is positive but not significant at conventional levels. The results reported in Appendix A do not contradict our hypothesis because one of the two potential reasons for firm size reducing conservatism is information asymmetry.

The results reported in Appendix A indicate that larger firms report less conservative earnings. As suggested above one potential reason for this result is the aggregation effect. Specifically, both the earnings and returns of larger firms represent the aggregation of results across multiple segments and projects which potentially reduces conservatism as measured by the Basu coefficient. The potentially offsetting nature of the multiple projects may result in a positive return at the firm level even when one or more projects experience bad news. In this case the Basu coefficient will not be able to detect conservatism due to the aggregation of projects producing a positive return.

To provide some evidence on the aggregation hypothesis Appendix B reports the results of the following equation (11):

$$NI = \alpha + \beta_1 DR + \beta_2 RET + \beta_3 RET * DR + \beta_4 SIZE + \beta_5 SIZE * DR + \beta_6 SIZE * RET + \beta_7 SIZE * RET * DR + \beta_8 MULTSEG + \beta_9 SIZE * MULTSEG + \beta_{10} SIZE * MULTSEG * DR + \beta_{11} SIZE * MULTSEG * RET + \beta_{12} SIZE * MULTSEG * RET * DR + \varepsilon \quad (11)$$

where MULTSEG is equal to one if the firms reports more than one business segment in for the fiscal period, zero otherwise. We use the MULTSEG dummy to capture cross-sectional differences in the aggregation effect. We expect firms with multiple segments to have relatively more aggregation in both returns and earnings thus reducing conservatism. The results reported in Appendix B indicate that MULTSEG dummy is not associated with conservatism and does not affect the influence of SIZE on conservatism. The combined results provide some evidence that the affect of SIZE on conservatism is unlikely to be entirely driven by the aggregation effect. We interpret the results reported in Appendix B as providing further evidence that the negative association between firm size and conservatism is at least partially due to firm size proxying for information asymmetry.

7.2 Alternative Measures of Information Asymmetry

To provide further support for our hypotheses we repeat the analysis using the average bid-ask spread over the fiscal year. Specifically, we collect the closing bid and closing ask from the CRSP daily stock file. We then take the average of the bid-ask spread scaled by closing price over the fiscal year. We repeat the entire analysis using the average bid-ask spread and the change in the bid-ask spread. The results of this additional analysis, reported in Appendix C, are consistent with the tabled results using the PIN score. Specifically, we find that firms with higher bid-ask spreads report more conservative earnings and that changes in the bid-ask spread lead changes in conservatism. If anything these results are more consistent with hypotheses 1 and 2.

7.3 Regulation

Differences in firms' regulatory environments potentially influence the demand for conservatism (Watts, 1977). To ensure that our results are not due to the effect of differences in firms' regulatory environments on conservatism we repeat the main analysis (Tables 2, 3, 4, and 6) after eliminating regulated industries (Financials and Utilities). The results of these analyses are consistent with the tabled results. We continued to find support for first and second hypothesis. In addition we find no evidence supporting the third hypothesis.

7.4 Non-overlapping periods

The results for the two and three year specifications are estimated annually resulting in over lapping periods. We correct for auto correlation in the coefficients, using the Newey-West procedure, mitigating concerns that the overlapping periods are driving our results. Nevertheless, we investigate whether our results are robust to using non-overlapping periods for the longer horizon Basu estimates. Specifically, for the two (three) year estimations we repeat the analysis using every second (third) year, eliminating the overlapping periods. The results from this analysis are similar to those reported in the tables in that we continue to find that firms with higher PIN scores report more conservative earnings even after controlling for other contracting based demands for conservatism.

7.5 Additional Control Variables

We repeat the analysis presented in Table 4 with one additional control variable, Altman's (1980) Z-score, and its interaction terms. We include the decile rank of Altman's (1980) Z-score, finding that firms with higher Z-scores (less distressed) report

less conservative earnings. More importantly we find that the results on the PIN score are robust to the inclusion of the Z-score.

7.6 Non-operating Accruals

As a final robustness test we examine the association between the PIN score and non-operating accruals, where non-operating accruals (NONOP) are defined as net income (Compustat # 172) plus deprecation and amortization expense (Compustat #14) minus cash flow from operations (Compustat #308) plus the change in inventory (Compustat #303) plus the change in accounts receivable (Compustat #302) plus the change in accounts payable (Compustat #304) plus the change in accrued income taxes (Compustat #305), scaled by total assets (Compustat #6). Requiring statement of cash flow data to calculate NONOP significantly reduces the sample (average of 493 firms a year) and time period (1988-2001). For each fiscal year from 1988 to 2001 we estimate the following regression: (12):

$$NONOP = \alpha + \beta_1 PIN + \varepsilon \qquad (12)$$

where all variables are as previously defined.

In untabled descriptive statistics the mean non-operating accrual is -0.016 for our sample. The Fama-MacBeth (1973) coefficient on PIN is -0.033, significant at the 0.01 level one-sided. This result in conjunction with the descriptive statistics on NONOP indicates that firms with larger PIN scores report more negative non-operating accruals providing further evidence that firms with larger PIN are more conservative. In addition this result provides some evidence on the accounting mechanism through which firms with larger PIN scores are more conservative.

8. Conclusion

In this paper we investigate the effect of information asymmetry among informed and uninformed equity investors for conservatism. We find that firms with higher PIN scores incorporate less information about gains and more information about losses into the current financial statements. In addition, we find that the asymmetric recognition of gains and losses in the current financial statements is increasing in the level of information asymmetry between informed and uninformed investors. Our results are consistent with equity investors demanding more conservative earnings as a means of mitigating agency problems between informed and uninformed investors. Moreover, we find that conservatism increases following increases in information asymmetries between informed and uninformed equity investors. This result further supports our contention that conservatism is an equilibrium response to mitigate value reductions resulting from information asymmetries between informed and uninformed equity investors.

We interpret our results as consistent with our argument that users of accounting information value the verifiability of accounting information, in that accounting provides a hard, verifiable benchmark useful in mitigating information asymmetries and the resulting agency cost. In settings with higher information asymmetries the role of accounting is not to report equity values, but instead to provide verifiable information useful for assessing alternative information sources on equity values and mitigating agency cost. Our results have implications for accounting standard setters attempting to eliminate conservatism in financial reports. Our finding that conservatism increases in response to increases in information asymmetries in equity markets provides the first evidence, we are aware of, that contradicts the FASB's view that conservatism limits the

information role of financial statements in equity markets. Further, our findings highlight that conservatism is an equilibrium response to mitigate value reductions arising from information asymmetries.

Finally, our results have implications for accounting research examining the determinants of conservatism. Prior research tends to focus on the demands for conservatism from parties entering into explicit contracts with the firm (e.g. debt and compensation contracts). Our results confirm the strong influence of debt contracting on conservatism, but also indicate that governance mechanisms (e.g. control of management via conservatism) generate a demand for conservatism much like that generated by explicit contracts. Our results also confirm the strong influence of litigation on conservatism. We find little evidence to support the compensation contracting demand for conservatism, but those tests lack power.

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Appendix A: Size Sensitivity Test
Fama- MacBeth Regressions

$$NI = \alpha + \beta_1 DR + \beta_2 RET + \beta_3 RET * DR + \beta_4 MB + \beta_5 MB * DR + \beta_6 MB * RET + \beta_7 MB * RET * DR + \beta_8 LEV + \beta_9 LEV * DR + \beta_{10} LEV * RET + \beta_{11} LEV * RET * DR + \beta_{12} PROBLIT + \beta_{13} PROBLIT * DR + \beta_{14} PROBLIT * RET + \beta_{15} PROBLIT * RET * DR + \beta_{16} SIZE + \beta_{17} SIZE * DR + \beta_{18} SIZE * RET + \beta_{19} SIZE * RET * DR + \beta_{20} PIN + \beta_{21} PIN * DR + \beta_{22} PIN * RET + \beta_{23} PIN * RET * DR + \varepsilon$$

Estimation Period=		One Year		Two Year		Three Year	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	0.019	*0.38*	0.082	*0.03*	0.140	*0.01*
DR	?	-0.068	*0.07*	-0.079	*0.34*	-0.094	*0.11*
RET	+	0.036	*0.28*	0.198	*0.00*	0.301	*0.00*
RET*DR	+	0.283	*0.01*	0.278	*0.10*	0.302	*0.04*
MB	?	-0.009	*0.00*	-0.016	*0.00*	-0.032	*0.00*
MB*DR	?	-0.001	*0.83*	-0.012	*0.01*	-0.007	*0.18*
MB*RET	-	-0.003	*0.14*	-0.011	*0.00*	-0.014	*0.00*
MB*RET*DR	-/+	-0.022	*0.09*	-0.026	*0.02*	-0.023	*0.05*
LEV	?	-0.029	*0.06*	-0.018	*0.32*	-0.032	*0.20*
LEV*DR	?	-0.020	*0.54*	-0.076	*0.04*	-0.074	*0.30*
LEV*RET	-	-0.081	*0.02*	-0.056	*0.12*	-0.009	*0.38*
LEV*RET*DR	+	0.523	*0.00*	0.364	*0.00*	0.298	*0.07*
PROBLIT	?	-0.017	*0.06*	0.002	*0.88*	0.024	*0.54*
PROBLIT*DR	?	0.001	*0.94*	-0.004	*0.88*	-0.054	*0.32*
PROBLIT*RET	?	0.001	*0.49*	-0.018	*0.19*	-0.018	*0.30*
PROBLIT*RET*DR	+	0.092	*0.03*	0.193	*0.00*	0.139	*0.00*
SIZE	?	0.010	*0.00*	0.012	*0.01*	0.017	*0.02*
SIZE*DR	?	0.007	*0.11*	0.010	*0.26*	0.009	*0.13*
SIZE*RET	+	0.004	*0.24*	-0.002	*0.19*	-0.007	*0.00*
SIZE*RET*DR	-	-0.052	*0.00*	-0.055	*0.00*	-0.050	*0.00*
PIN	?	0.025	*0.58*	-0.061	*0.12*	-0.081	*0.15*
PIN*DR	?	0.090	*0.17*	0.151	*0.36*	0.231	*0.19*
PIN*RET	-	0.129	*0.18*	-0.084	*0.15*	-0.249	*0.00*
PIN*RET*DR	+	0.058	*0.40*	0.138	*0.40*	0.292	*0.27*
Average Adj R^2		0.30		0.34		0.39	
Average n		872		872		872	

Notes: This table presents the result of Fama MacBeth regressions estimated annually over the 1983 to 2001 time horizon. P-values are based on the time series standard errors of the coefficient estimates, where the standard errors are corrected for autocorrelation using the Newey-West procedure. P-values are one tailed. In one year specification earnings and returns are measured over the fiscal year. In the two year specification earnings and returns are aggregated over the current and prior fiscal year. In the three year specification earnings and returns are aggregated over the current and prior two fiscal years. NI is equal to cumulative net income before extraordinary items (Compustat #18) divided by beginning of aggregation period market value of equity. RET is the buy and hold return over the aggregation period. DR is equal to one if RET is negative, zero otherwise. MB is the market to book ratio defined as market value of equity (Compustat #199*Compustat #25) divided by book value of equity (Compustat # 60) as of the end of the aggregation period. LEV is defined as total debt (Compustat #9+Compustat #34) divided by total assets (Compustat #6) as of the end of the aggregation period. PROBLIT is the probability of auditor litigation, where the probabilities are calculated using the parameters from Table 3 of Shu (2000) as of the end of the aggregation period. PIN is the probability of an information based trade as of the end of the aggregation period. SIZE is equal to the natural log of market value of equity (Compustat #199*Compustat #25) as of the end of the aggregation period.

Appendix B: Size and Conservatism Analysis
Examining the influence of Aggregation, Single versus Mutli-Segment Firms
Fama- MacBeth Regressions

$$NI = \alpha + \beta_1 DR + \beta_2 RET + \beta_3 RET * DR + \beta_4 SIZE + \beta_5 SIZE * DR + \beta_6 SIZE * RET + \beta_7 SIZE * RET * DR + \beta_8 MULTSEG + \beta_9 SIZE * MULTSEG + \beta_{10} SIZE * MULTSEG * DR + \beta_{11} SIZE * MULTSEG * RET + \beta_{12} SIZE * MULTSEG * RET * DR + \varepsilon$$

Estimation Period=		One Year		Two Year		Three Year	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	-0.018	*0.01*	-0.009	*0.64*	0.000	*0.99*
DR	?	-0.050	*0.01*	-0.089	*0.00*	-0.064	*0.02*
RET	+	-0.011	*0.23*	0.032	*0.07*	0.170	*0.00*
RET*DR	+	0.411	*0.00*	0.428	*0.00*	0.349	*0.00*
SIZE	?	0.013	*0.00*	0.024	*0.00*	0.035	*0.00*
SIZE*DR	?	0.007	*0.02*	0.010	*0.01*	0.003	*0.40*
SIZE*RET	+	0.006	*0.02*	0.003	*0.17*	-0.013	*0.00*
SIZE*RET*DR	-	-0.048	*0.00*	-0.040	*0.00*	-0.020	*0.12*
MULTSEG	?	0.020	*0.16*	0.036	*0.10*	0.081	*0.00*
MULTSEG*DR	?	0.007	*0.69*	0.022	*0.15*	0.008	*0.89*
MULTSEG*RET	?	0.030	*0.16*	0.057	*0.00*	0.016	*0.51*
MULTSEG*RET*DR	-	-0.008	*0.39*	0.014	*0.43*	0.107	*0.15*
SIZE*MULTSEG	?	-0.005	*0.06*	-0.009	*0.05*	-0.017	*0.00*
SIZE*MULTSEG*DR	?	0.000	*0.97*	-0.005	*0.24*	0.000	*0.99*
SIZE*MULTSEG*RET	?	-0.003	*0.39*	-0.007	*0.04*	0.001	*0.84*
SIZE*MULTSEG*RET*DR	-	0.008	*0.17*	-0.006	*0.35*	-0.016	*0.22*
Average Adj R^2		0.20		0.24		0.34	
Average n		4368		4368		4368	

Notes: This table presents the result of Fama MacBeth regressions estimated annually over the 1983 to 2001 time horizon. P-values are based on the time series standard errors of the coefficient estimates, where the standard errors are corrected for autocorrelation using the Newey-West procedure. P-values are one tailed. In one year specification earnings and returns are measured over the fiscal year. In the two year specification earnings and returns are aggregated over the current and prior fiscal year. In the three year specification earnings and returns are aggregated over the current and prior two fiscal years. NI is equal to cumulative net income before extraordinary items (Compustat #18) divided by beginning of aggregation period market value of equity. RET is the buy and hold return over the aggregation period. DR is equal to one if RET is negative, zero otherwise. SIZE is equal to the natural log of market value of equity (Compustat #199*Compustat #25) as of the end of the aggregation period. MULTSEG is equal to one if the firm has more than one business segment (source Compustat segment file) zero otherwise as of the end of the accumulation period.

Appendix C-Table 1
Bid Ask Spread Conservatism Sensitivity Test
Fama- MacBeth Regressions

Panel A: Baseline Model

$$NI = \alpha + \beta_1 DR + \beta_2 RET + \beta_3 RET * DR + \beta_4 BA + \beta_5 BA * DR + \beta_6 BA * RET + \beta_7 PIN * RET * BA + \varepsilon$$

Estimation Period=		j=0		j=1		j=2	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	0.084	*0.00*	0.174	*0.00*	0.264	*0.00*
DR	?	0.004	*0.79*	-0.028	*0.07*	-0.041	*0.03*
RET	+	0.053	*0.01*	0.074	*0.01*	0.098	*0.00*
RET*DR	+	0.120	*0.02*	0.158	*0.01*	0.298	*0.00*
BA	?	-0.068	*0.00*	-0.138	*0.00*	-0.209	*0.00*
BA*DR	?	-0.033	*0.13*	-0.011	*0.47*	0.002	*0.84*
BA*RET	-	-0.053	*0.01*	-0.021	*0.14*	0.015	*0.32*
BA*RET*DR	+	0.302	*0.00*	0.281	*0.00*	0.133	*0.07*
Average Adj R^2		0.21		0.23		0.27	
Average n		2,538		2,538		2,538	

Appendix C-Table 1 Continued

Panel B: Combined Sample, controlling for Market-to-Book and Leverage

$$NI = \alpha + \beta_1 DR + \beta_2 RET + \beta_3 RET * DR + \beta_4 MB + \beta_5 MB * DR + \beta_6 MB * RET + \beta_7 MB * RET * DR + \beta_8 LEV + \beta_9 LEV * DR + \beta_{10} LEV * RET + \beta_{11} LEV * RET * DR + \beta_{12} PIN + \beta_{13} PIN * DR + \beta_{14} PIN * RET + \beta_{15} PIN * RET * DR + \varepsilon$$

Estimation Period=		One Year		Two Year		Three Year	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	0.110	*0.00*	0.215	*0.00*	0.323	*0.00*
DR	?	0.014	*0.23*	-0.010	*0.33*	-0.015	*0.20*
RET	+	0.096	*0.00*	0.148	*0.00*	0.183	*0.00*
RET*DR	+	0.037	*0.23*	0.050	*0.19*	0.214	*0.00*
MB	?	-0.008	*0.00*	-0.017	*0.00*	-0.034	*0.00*
MB*DR	?	0.001	*0.70*	-0.006	*0.08*	0.000	*0.96*
MB*RET	-	-0.006	*0.00*	-0.012	*0.00*	-0.011	*0.00*
MB*RET*DR	-/+	-0.012	*0.02*	-0.018	*0.01*	-0.024	*0.00*
LEV	?	-0.048	*0.01*	-0.076	*0.03*	-0.053	*0.26*
LEV*DR	?	-0.028	*0.29*	-0.001	*0.69*	-0.052	*0.33*
LEV*RET	-	-0.004	*0.48*	0.002	*0.42*	-0.016	*0.20*
LEV*RET*DR	+	0.302	*0.00*	0.269	*0.00*	0.166	*0.03*
BA	?	-0.075	*0.00*	-0.140	*0.00*	-0.198	*0.00*
BA*DR	?	-0.033	*0.10*	-0.006	*0.75*	0.007	*0.72*
BA*RET	-	-0.052	*0.00*	-0.037	*0.01*	-0.004	*0.39*
BA*RET*DR	+	0.264	*0.00*	0.293	*0.00*	0.176	*0.03*
Average Adj R^2		0.25		0.29		0.34	
Average n		2,538		2,538		2,538	

Appendix C-Table 1 Continued

Panel C: Combined Sample, controlling for Market-to-Book, Leverage, and Litigation

$$NI = \alpha + \beta_1 DR + \beta_2 RET + \beta_3 RET * DR + \beta_4 MB + \beta_5 MB * DR + \beta_6 MB * RET + \beta_7 MB * RET * DR + \beta_8 LEV + \beta_9 LEV * DR + \beta_{10} LEV * RET + \beta_{11} LEV * RET * DR + \beta_{12} PROBLIT + \beta_{13} PROBLIT * DR + \beta_{14} PROBLIT * RET + \beta_{15} PROBLIT * RET * DR + \beta_{16} PIN + \beta_{17} PIN * DR + \beta_{18} PIN * RET + \beta_{19} PIN * RET * DR + \varepsilon$$

Estimation Period=		One Year		Two Year		Three Year	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	0.079	*0.00*	0.158	*0.00*	0.236	*0.00*
DR	?	-0.008	*0.09*	-0.014	*0.20*	-0.012	*0.32*
RET	+	0.091	*0.00*	0.146	*0.00*	0.186	*0.00*
RET*DR	+	0.067	*0.01*	0.128	*0.00*	0.234	*0.00*
MB	?	-0.007	*0.00*	-0.017	*0.00*	-0.032	*0.00*
MB*DR	?	-0.001	*0.49*	-0.006	*0.01*	-0.004	*0.16*
MB*RET	-	-0.008	*0.00*	-0.013	*0.00*	-0.014	*0.00*
MB*RET*DR	-/+	-0.007	*0.02*	-0.013	*0.00*	-0.021	*0.00*
LEV	?	-0.005	*0.66*	0.000	*1.00*	0.046	*0.21*
LEV*DR	?	0.001	*0.94*	-0.021	*0.41*	-0.101	*0.05*
LEV*RET	-	0.002	*0.45*	0.006	*0.37*	0.004	*0.42*
LEV*RET*DR	+	0.360	*0.00*	0.249	*0.00*	0.157	*0.03*
PROBLIT	?	0.032	*0.89*	0.203	*0.38*	0.194	*0.83*
PROBLIT*DR	?	1.400	*0.11*	2.683	*0.08*	5.074	*0.02*
PROBLIT*RET	?	0.318	*0.23*	1.325	*0.02*	0.774	*0.26*
PROBLIT*RET*DR	+	0.616	*0.27*	5.926	*0.09*	10.219	*0.06*
BA	?	-0.555	*0.00*	-1.020	*0.00*	-1.585	*0.00*
BA*DR	?	0.133	*0.26*	0.227	*0.05*	0.531	*0.00*
BA*RET	-	0.038	*0.39*	0.039	*0.43*	0.194	*0.27*
BA*RET*DR	+	0.725	*0.03*	0.291	*0.23*	-0.293	*0.27*
Average Adj R^2		0.34		0.40		0.45	
Average n		1,905		1,905		1,905	

Appendix C-Table 1 Continued

Panel D: Combined Sample, controlling for Market-to-Book, Leverage, Litigation, and Size

$$NI = \alpha + \beta_1 DR + \beta_2 RET + \beta_3 RET * DR + \beta_4 MB + \beta_5 MB * DR + \beta_6 MB * RET + \beta_7 MB * RET * DR + \beta_8 LEV + \beta_9 LEV * DR + \beta_{10} LEV * RET + \beta_{11} LEV * RET * DR + \beta_{12} PROBLIT + \beta_{13} PROBLIT * DR + \beta_{14} PROBLIT * RET + \beta_{15} PROBLIT * RET * DR + \beta_{16} SIZE + \beta_{17} SIZE * DR + \beta_{18} SIZE * RET + \beta_{19} SIZE * RET * DR + \beta_{20} BA + \beta_{21} BA * DR + \beta_{22} BA * RET + \beta_{23} BA * RET * DR + \varepsilon$$

Estimation Period=		One Year		Two Year		Three Year	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	0.046	*0.00*	0.089	*0.00*	0.113	*0.00*
DR	?	-0.027	*0.02*	-0.051	*0.01*	0.003	*0.79*
RET	+	0.102	*0.00*	0.170	*0.00*	0.221	*0.00*
RET*DR	+	0.115	*0.07*	0.162	*0.00*	0.261	*0.00*
MB	?	-0.008	*0.00*	-0.017	*0.00*	-0.033	*0.00*
MB*DR	?	-0.001	*0.23*	-0.005	*0.01*	-0.003	*0.25*
MB*RET	-	-0.008	*0.00*	-0.013	*0.00*	-0.014	*0.00*
MB*RET*DR	-/+	-0.008	*0.01*	-0.012	*0.00*	-0.021	*0.00*
LEV	?	-0.006	*0.60*	-0.009	*0.74*	0.033	*0.32*
LEV*DR	?	-0.003	*0.86*	-0.013	*0.52*	-0.086	*0.04*
LEV*RET	-	0.001	*0.48*	0.011	*0.28*	0.012	*0.27*
LEV*RET*DR	+	0.376	*0.00*	0.259	*0.00*	0.176	*0.01*
PROBLIT	?	-0.135	*0.54*	-0.435	*0.21*	-0.177	*0.77*
PROBLIT*DR	?	1.059	*0.07*	0.225	*0.69*	2.713	*0.02*
PROBLIT*RET	?	0.468	*0.13*	1.512	*0.01*	0.778	*0.25*
PROBLIT*RET*DR	+	-0.332	*0.33*	2.909	*0.19*	7.534	*0.07*
SIZE	?	0.005	*0.00*	0.011	*0.00*	0.018	*0.00*
SIZE*DR	?	0.003	*0.05*	0.006	*0.03*	-0.002	*0.30*
SIZE*RET	+	-0.002	*0.12*	-0.003	*0.03*	-0.005	*0.02*
SIZE*RET*DR	-	-0.017	*0.09*	-0.021	*0.00*	-0.020	*0.02*
BA	?	-0.321	*0.00*	-0.568	*0.00*	-0.675	*0.00*
BA*DR	?	0.177	*0.19*	0.368	*0.03*	0.246	*0.10*
BA*RET	-	-0.016	*0.46*	-0.185	*0.17*	-0.091	*0.37*
BA*RET*DR	+	0.473	*0.10*	0.417	*0.16*	-0.085	*0.43*
Average Adj R^2		0.35		0.41		0.48	
Average n		1,905		1,905		1,905	

Appendix C-Table 1 Continued

Notes: This table presents the result of Fama MacBeth regressions estimated annually over the 1983 to 2001 time horizon. P-values are based on the time series standard errors of the coefficient estimates, where the standard errors are corrected for autocorrelation using the Newey-West procedure. P-values are one tailed. In one year specification earnings and returns are measured over the fiscal year. In the two year specification earnings and returns are aggregated over the current and prior fiscal year. In the three year specification earnings and returns are aggregated over the current and prior two fiscal years. NI is equal to cumulative net income before extraordinary items (Compustat #18) divided by beginning of aggregation period market value of equity. RET is the buy and hold return over the aggregation period. DR is equal to one if RET is negative, zero otherwise. MB is the market to book ratio defined as market value of equity (Compustat #199*Compustat #25) divided by book value of equity (Compustat # 60) as of the end of the aggregation period. LEV is defined as total debt (Compustat #9+Compustat #34) divided by total assets (Compustat #6) as of the end of the aggregation period. PROBLIT is the probability of auditor litigation, where the probabilities are calculated using the parameters from Table 3 of Shu (2000) as of the end of the aggregation period. SIZE is equal to the natural log of market value of equity (Compustat #199*Compustat #25) as of the end of the aggregation period. BA is the average bid-ask spread over the fiscal year scaled by price.

Appendix C-Table 2
Changes in Bid Ask Spread Analysis Controlling for
Beginning of Change Period Bid Ask Spread
Fama- MacBeth Regressions

$$NI_t = \alpha + \beta_1 DR_t + \beta_2 RET_t + \beta_3 RET_t * DR_t + \beta_4 \Delta BA_{t+X} + \beta_5 \Delta BA_{t+X} * DR_t + \beta_6 \Delta BA_{t+X} * RET_t + \beta_7 \Delta BA_{t+X} * RET_t * DR_t + \beta_8 BA_{t-1+X} + \beta_9 BA_{t-1+X} * DR_t + \beta_{10} BA_{t-1+X} * RET_t + \beta_{11} BA_{t-1+X} * RET_t * DR_t + \varepsilon_t$$

Change Period=		x=-1		x=0		x=+1	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	0.072	*0.00*	0.076	*0.00*	0.078	*0.00*
DR_t	?	-0.001	*0.86*	-0.005	*0.50*	-0.004	*0.61*
RET_t	+	0.022	*0.06*	0.024	*0.04*	0.025	*0.04*
RET_t*DR_t	+	0.311	*0.00*	0.261	*0.00*	0.256	*0.00*
ΔBA_{t+x}	?	-1.035	*0.00*	-0.664	*0.00*	-0.717	*0.00*
$\Delta BA_{t+x}*DR_t$	?	0.007	*0.98*	0.019	*0.93*	0.001	*1.00*
$\Delta BA_{t+x}*RET_t$	-	0.036	*0.42*	0.043	*0.45*	0.279	*0.17*
$\Delta BA_{t+x}*RET_t*DR_t$	+	1.077	*0.01*	0.861	*0.08*	-1.077	*0.04*
BA_{t-1+x}	?	-0.442	*0.00*	-0.622	*0.00*	-0.722	*0.00*
$BA_{t-1+x}*DR_t$	?	-0.205	*0.04*	-0.156	*0.24*	-0.088	*0.49*
$BA_{t-1+x}*RET_t$	-	0.008	*0.47*	-0.025	*0.44*	-0.037	*0.44*
$BA_{t-1+x}*RET_t*DR_t$	+	-0.389	*0.01*	-0.127	*0.30*	0.079	*0.39*
Average Adj R^2		0.20		0.20		0.21	
Average n		2,600		2,600		2,600	

Notes: This table presents the result of Fama MacBeth regressions estimated annually over the 1985 to 2000 time horizon. P-values are based on the time series standard errors of the coefficient estimates, where the standard errors are corrected for autocorrelation using the Newey-West procedure. P-values are one tailed when the sign of the coefficient is predicted, two-tailed otherwise. $NI_{t-j,t}$ is equal to cumulative net income before extraordinary items (Compustat #18) during years t-j to t divided by beginning of period market value of equity. RET is the buy and hold return over fiscal years t-j to t. $DR_{t-j,t}$ is equal to one if $RET_{t-j,t}$ is negative, zero otherwise. BA is the average bid-ask spread over the fiscal year scaled by price. ΔBA is the change in bid-ask spread over the analysis period.

Appendix C-Table 3
Changes in Bid Ask Spread and Changes in Conservatism
Fama- MacBeth Regressions

Panel A: Coefficient Estimates

$$NI = \alpha + \beta_1 DR + \beta_2 RET + \beta_3 RET * DR + \varepsilon$$

ΔBA Group	Mean ΔPIN	Year t-2 $\beta_{3,\,t-2}$	Year t-1 $\beta_{3,\,t-1}$	Year t $\beta_{3,\,t}$	Year t+1 $\beta_{3,\,t+1}$
Group 1	-0.023	0.330	0.394	0.292	0.402
Group 2	-0.003	0.319	0.293	0.346	0.449
Group 3	0.001	0.259	0.318	0.408	0.464
Group 4	0.020	0.283	0.337	0.441	0.715

Panel B: Within Group Test of Differences

ΔBA Group	Pre Change Period Difference Year t-1, Year t-2 $\beta_{3,\,t-1}$-$\beta_{3,\,t-2}$	Concurrent Change Period Difference Year t, Year t-1 $\beta_{3,\,t}$-$\beta_{3,\,t-1}$	Post Change Period Difference Year t+1, Year t $\beta_{3,\,t+1}$-$\beta_{3,\,t}$
Group 1	0.064	-0.102	0.110
	0.02	*0.01*	*0.01*
Group 2	-0.026	0.053	0.103
	0.23	*0.16*	*0.11*
Group 3	0.059	0.090	0.056
	0.06	*0.03*	*0.13*
Group 4	0.054	0.104	0.274
	0.04	*0.01*	*0.01*

Panel C: Across Group Test of Differences

	Pre Change Period Difference Year t-1, Year t-2 Group 4 ($\beta_{3,\,t-1}$-$\beta_{3,\,t-2}$)- Group 1 ($\beta_{3,\,t-1}$-$\beta_{3,\,t-2}$)	Concurrent Change Period Difference Year t, Year t-1 Group 4 ($\beta_{3,\,t}$-$\beta_{3,\,t-1}$)- Group 1 ($\beta_{3,\,t}$-$\beta_{3,\,t-1}$)	Post Change Period Difference Year t+1, Year t Group 4 ($\beta_{3,\,t+1}$-$\beta_{3,\,t}$)- Group 1 ($\beta_{3,\,t+1}$-$\beta_{3,\,t}$)
Group 4 – Group 1	-0.01	0.206	0.164
	0.40	*0.01*	*0.01*

Appendix C-Table 3 Continued

Notes: Panel A presents select Fama MacBeth coefficients from annual cross sectional estimates of Basu (1997) regression for each of the change in BA quartiles, where quartiles are formed by ranking firms into four groups based on the change in BA over period t, (i.e. BA_t minus BA_{t-1}). Panels B and C test whether the time series average of difference in coefficients is different from zero. P-values are based on the time series standard errors of the coefficient estimates, where the standard errors are corrected for autocorrelation using the Newey-West procedure. P-values are one tailed. NI is equal to net income before extraordinary items (Compustat #18) divided by beginning of fiscal period market value of equity. RET is the buy and hold return over the fiscal year. DR is equal to one if RET is negative, zero otherwise. BA is the average bid-ask spread over the fiscal year scaled by price.

TABLE 1
Sample and Descriptive Statistics

Panel A: Descriptive Statistics 1983-2001, n=20,389

	Mean	Median	Std	Q1	Q3
PIN	0.195	0.182	0.077	0.140	0.235
MB	2.243	1.594	2.259	1.086	2.506
LEV	0.267	0.260	0.179	0.126	0.380
MKTCAP	2888	529	9463	102	2065
$NI_{one\ year}$	0.040	0.068	0.165	0.026	0.106
$NI_{two\ year}$	0.114	0.143	0.265	0.056	0.226
$NI_{three\ year}$	0.210	0.226	0.385	0.089	0.366
$RET_{one\ year}$	0.149	0.105	0.432	-0.113	0.344
$RET_{two\ year}$	0.331	0.235	0.700	-0.111	0.619
$RET_{three\ year}$	0.536	0.363	0.978	-0.074	0.898

Panel B: Correlations Pearson top (Spearman bottom)

	PIN	MB	LEV	MKTCAP	$NI_{one\ year}$	$NI_{two\ year}$	$NI_{three\ year}$	$RET_{one\ year}$	$RET_{two\ year}$	$RET_{three\ year}$
PIN		**-0.154**	**-0.060**	**-0.301**	**-0.096**	**-0.107**	**-0.106**	**0.048**	-0.005	**-0.044**
MB	**-0.291**		**0.040**	**0.230**	**-0.045**	**-0.075**	**-0.093**	**0.200**	**0.248**	**0.268**
LEV	**-0.085**	**-0.047**		-0.001	**-0.139**	**-0.135**	**-0.127**	**-0.083**	**-0.112**	**-0.122**
MKTCAP	**-0.700**	**0.433**	0.000		**0.047**	**0.045**	**0.039**	**0.055**	**0.077**	**0.092**
$NI_{one\ year}$	0.005	**-0.052**	**-0.090**	**0.138**		**0.777**	**0.631**	**0.299**	**0.340**	**0.323**
$NI_{two\ year}$	**-0.044**	-0.009	**-0.104**	**0.188**	**0.792**		**0.829**	**0.204**	**0.404**	**0.413**
$NI_{three\ year}$	**-0.072**	-0.001	**-0.107**	**0.214**	**0.674**	**0.852**		**0.149**	**0.302**	**0.477**
$RET_{one\ year}$	0.003	**0.309**	**-0.089**	**0.202**	**0.443**	**0.286**	**0.216**		**0.648**	**0.492**
$RET_{two\ year}$	**-0.051**	**0.377**	**-0.119**	**0.268**	**0.444**	**0.553**	**0.416**	**0.659**		**0.753**
$RET_{three\ year}$	**-0.099**	**0.400**	**-0.134**	**0.311**	**0.427**	**0.548**	**0.614**	**0.521**	**0.779**	

Bold Text indicates significance at the 0.05 level or better, two tailed.

TABLE 1 Continued

Panel C: PIN Investment Opportunity Set variables Fama-MacBeth Regressions

$$PIN = \alpha + \beta_1 SIZE + \beta_2 MB + \beta_3 LEV + \beta_4 DIVYLD + \beta_5 \%OPTIONS + \varepsilon$$

		Full Sample		Sample With Compensation Data	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	0.352	*0.00*	0.295	*0.00*
SIZE	-	-0.024	*0.00*	-0.019	*0.00*
MB	+	0.001	*0.00*	0.001	*0.07*
LEV	-	-0.032	*0.00*	-0.019	*0.00*
DIVYLD	-	-0.049	*0.00*	-0.090	*0.00*
%OPTIONS	+			0.571	*0.08*
Average Adj R^2		0.43		0.37	
Average n		1,073		627	

Notes: Sample period encompasses the 1983 to 2001 time period. PIN is the probability of an information based trade. MB, the Market to Book ratio, is defined as the market value of equity (Compustat #199*Compustat #25) divided by the book value of equity(Compustat # 60). LEV, leverage, is defined as total debt (Compustat #9+Compustat #34) divded by total assets (Compustat #6). MKTCAP, market value of equity in $millions (Compustat #199*Compustat #25). NI is equal to cumulative net income before extraordinary items (Compustat #18) divided by beginning of aggregation period market value of equity where the aggregation period is either one, two or three years. RET is the buy and hold return over the aggregation period where the aggregation period is either one, two or three years. Panel C presents the result of Fama MacBeth regressions estimated annually over the 1983 to 2001 and 1992 to 2001 time horizons. DIVYLD is defined as Common dividends plus Share Repurchases (Compustat #115 less the change in preferred stock) divided by market value of equity. %OPTIONS is defined as the value of options based compensation divided by total compensation. We collect compensation data from Execucomp thereby restricting the %OPTIONS analysis to the 1992 to 2001 time period. SIZE is equal to the natural log of market value of equity (Compustat #199*Compustat #25). P-values are based on the time series standard errors of the coefficient estimates, where the standard errors are corrected for autocorrelation using the Newey-West procedure. P-values are one tailed when the sign of the coefficient is predicted, two-tailed otherwise.

TABLE 2
Conservatism and PIN
Fama- MacBeth Regressions

Panel A: Positive Return (Good News) Sample

$$NI = \alpha + \beta_1 RET + \beta_2 PIN + \beta_3 PIN * RET + \varepsilon$$

Estimation Period=		One Year		Two Year		Three Year	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	0.073	*0.00*	0.148	*0.00*	0.224	*0.00*
RET	+	0.045	*0.05*	0.122	*0.00*	0.167	*0.00*
PIN	?	-0.054	*0.11*	-0.124	*0.08*	-0.184	*0.12*
PIN*RET	-	-0.032	*0.36*	-0.115	*0.04*	-0.136	*0.06*
Average Adj R^2		0.03		0.08		0.15	
Average n		672		727		764	

Panel B: Negative Return (Bad News) Sample

$$NI = \alpha + \beta_1 RET + \beta_2 PIN + \beta_3 PIN * RET + \varepsilon$$

Estimation Period=		One Year		Two Year		Three Year	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	0.086	*0.00*	0.154	*0.00*	0.238	*0.00*
RET	+	0.284	*0.00*	0.343	*0.00*	0.532	*0.00*
PIN	?	-0.107	*0.06*	-0.196	*0.13*	-0.354	*0.02*
PIN*RET	+	0.837	*0.02*	0.892	*0.01*	0.453	*0.10*
Average Adj R^2		0.19		0.19		0.18	
Average n		401		346		309	

TABLE 2 Continued

Panel C: Combined Sample

$$NI = \alpha + \beta_1 DR + \beta_2 RET + \beta_3 RET * DR + \beta_4 PIN + \beta_5 PIN * DR + \beta_6 PIN * RET + \beta_7 PIN * RET * DR + \varepsilon$$

Estimation Period=		One Year		Two Year		Three Year	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	0.073	*0.00*	0.148	*0.00*	0.224	*0.00*
DR	?	0.013	*0.28*	0.006	*0.82*	0.014	*0.64*
RET	+	0.045	*0.05*	0.122	*0.00*	0.167	*0.00*
RET*DR	+	0.238	*0.01*	0.221	*0.00*	0.365	*0.00*
PIN	?	-0.054	*0.11*	-0.124	*0.08*	-0.184	*0.11*
PIN*DR	?	-0.053	*0.39*	-0.072	*0.57*	-0.170	*0.19*
PIN*RET	-	-0.032	*0.36*	-0.115	*0.04*	-0.136	*0.04*
PIN*RET*DR	+	0.868	*0.01*	1.007	*0.01*	0.590	*0.09*
Average Adj R^2		0.21		0.27		0.32	
Average n		1,073		1,073		1,073	

Notes: This table presents the result of Fama MacBeth regressions estimated annually over the 1983 to 2001 time horizon. P-values are based on the time series standard errors of the coefficient estimates, where the standard errors are corrected for autocorrelation using the Newey-West procedure. P-values are one tailed. In one year specification earnings and returns are measured over the fiscal year. In the two year specification earnings and returns are aggregated over the current and prior fiscal year. In the three year specification earnings and returns are aggregated over the current and prior two fiscal years. NI is equal to cumulative net income before extraordinary items (Compustat #18) divided by beginning of aggregation period market value of equity. RET is the buy and hold return over the aggregation period. DR is equal to one if RET is negative, zero otherwise. PIN is the probability of an information based trade as of the end of the aggregation period.

TABLE 3
Conservatism, Market-to-Book, Leverage, and PIN
Fama-MacBeth Regressions

Panel A: Positive Return (Good News) Sample

$$NI = \alpha + \beta_1 RET + \beta_2 MB + \beta_3 MB * RET + \beta_4 LEV + \beta_5 LEV * RET + \beta_6 PIN + \beta_7 PIN * RET + \varepsilon$$

Estimation Period=		One Year		Two Year		Three Year	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	0.102	*0.00*	0.189	*0.00*	0.304	*0.00*
RET	+	0.089	*0.00*	0.198	*0.00*	0.254	*0.00*
MB	?	-0.009	*0.00*	-0.017	*0.00*	-0.034	*0.00*
MB*RET	-	-0.002	*0.18*	-0.012	*0.00*	-0.016	*0.00*
LEV	?	-0.020	*0.05*	-0.008	*0.63*	-0.038	*0.09*
LEV*RET	-	-0.107	*0.01*	-0.066	*0.07*	-0.010	*0.34*
PIN	?	-0.101	*0.00*	-0.213	*0.01*	-0.321	*0.02*
PIN*RET	-	0.003	*0.49*	-0.112	*0.02*	-0.163	*0.02*
Average Adj R^2		0.09		0.16		0.24	
Average n		672		727		764	

Panel B: Negative Return (Bad News) Sample

$$NI = \alpha + \beta_1 RET + \beta_2 MB + \beta_3 MB * RET + \beta_4 LEV + \beta_5 LEV * RET + \beta_6 PIN + \beta_7 PIN * RET + \varepsilon$$

Estimation Period=		One Year		Two Year		Three Year	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	0.127	*0.00*	0.231	*0.00*	0.308	*0.00*
RET	+	0.251	*0.03*	0.304	*0.00*	0.406	*0.00*
MB	?	-0.010	*0.02*	-0.026	*0.00*	-0.050	*0.00*
MB*RET	-	-0.036	*0.05*	-0.033	*0.01*	-0.053	*0.01*
LEV	?	-0.066	*0.05*	-0.106	*0.01*	-0.102	*0.21*
LEV*RET	+	0.292	*0.02*	0.245	*0.01*	0.240	*0.04*
PIN	?	-0.166	*0.01*	-0.265	*0.03*	-0.150	*0.24*
PIN*RET	+	0.586	*0.05*	0.727	*0.02*	0.733	*0.04*
Average Adj R^2		0.24		0.23		0.30	
Average n		401		346		309	

TABLE 3 Continued

Panel C: Combined Sample

$$NI = \alpha + \beta_1 DR + \beta_2 RET + \beta_3 RET * DR + \beta_4 MB + \beta_5 MB * DR + \beta_6 MB * RET + \beta_7 MB * RET * DR + \beta_8 LEV + \beta_9 LEV * DR + \beta_{10} LEV * RET + \beta_{11} LEV * RET * DR + \beta_{12} PIN + \beta_{13} PIN * DR + \beta_{14} PIN * RET + \beta_{15} PIN * RET * DR + \varepsilon$$

Estimation Period=		One Year		Two Year		Three Year	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	0.102	*0.00*	0.189	*0.00*	0.278	*0.00*
DR	?	0.025	*0.15*	0.043	*0.20*	0.041	*0.16*
RET	+	0.089	*0.00*	0.198	*0.00*	0.269	*0.00*
RET*DR	+	0.162	*0.10*	0.106	*0.09*	0.165	*0.01*
MB	?	-0.009	*0.00*	-0.017	*0.00*	-0.030	*0.00*
MB*DR	?	-0.001	*0.72*	-0.009	*0.11*	-0.019	*0.01*
MB*RET	-	-0.002	*0.18*	-0.012	*0.00*	-0.022	*0.00*
MB*RET*DR	-/+	-0.034	*0.07*	-0.021	*0.07*	-0.027	*0.02*
LEV	?	-0.020	*0.05*	-0.008	*0.63*	0.005	*0.81*
LEV*DR	?	-0.047	*0.18*	-0.099	*0.03*	-0.109	*0.21*
LEV*RET	-	-0.107	*0.01*	-0.066	*0.07*	-0.024	*0.18*
LEV*RET*DR	+	0.398	*0.00*	0.310	*0.00*	0.252	*0.04*
PIN	?	-0.101	*0.00*	-0.213	*0.01*	-0.273	*0.02*
PIN*DR	?	-0.064	*0.28*	-0.052	*0.65*	0.062	*0.61*
PIN*RET	-	0.003	*0.49*	-0.112	*0.02*	-0.107	*0.05*
PIN*RET*DR	+	0.583	*0.05*	0.839	*0.02*	0.836	*0.03*
Average Adj R^2		0.26		0.32		0.47	
Average n		1,073		1,073		1,073	

Notes: This table presents the result of Fama MacBeth regressions estimated annually over the 1983 to 2001 time horizon. P-values are based on the time series standard errors of the coefficient estimates, where the standard errors are corrected for autocorrelation using the Newey-West procedure. P-values are one tailed. In one year specification earnings and returns are measured over the fiscal year. In the two year specification earnings and returns are aggregated over the current and prior fiscal year. In the three year specification earnings and returns are aggregated over the current and prior two fiscal years. NI is equal to cumulative net income before extraordinary items (Compustat #18) divided by beginning of aggregation period market value of equity. RET is the buy and hold return over the aggregation period. DR is equal to one if RET is negative, zero otherwise. MB is the market to book ratio defined as market value of equity (Compustat #199*Compustat #25) divided by book value of equity (Compustat # 60) as of the end of the aggregation period. LEV is defined as total debt (Compustat #9+Compustat #34) divided by total assets (Compustat #6) as of the end of the aggregation period. PIN is the probability of an information based trade as of the end of the aggregation period.

TABLE 4
PIN and Conservatism, Low and High Leverage Groups
Fama- MacBeth Regressions

$$NI = \alpha + \beta_1 DR + \beta_2 RET + \beta_3 RET * DR + \beta_4 PIN + \beta_5 PIN * DR + \beta_6 PIN * RET + \beta_7 PIN * RET * DR + \varepsilon$$

Panel A: Low Leverage Group, mean LEV=0.051

Estimation Period=		One Year		Two Year		Three Year	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	0.046	*0.00*	0.125	*0.00*	0.190	*0.00*
DR	?	0.048	*0.04*	-0.019	*0.61*	0.015	*0.79*
RET	+	0.081	*0.01*	0.094	*0.00*	0.147	*0.00*
RET*DR	+	0.208	*0.07*	-0.142	*0.25*	0.231	*0.01*
PIN	?	0.080	*0.01*	-0.037	*0.51*	-0.006	*0.97*
PIN*DR	?	-0.157	*0.06*	0.190	*0.21*	-0.159	*0.62*
PIN*RET	-	-0.119	*0.14*	0.078	*0.20*	-0.013	*0.46*
PIN*RET*DR	+	0.896	*0.06*	2.571	*0.00*	0.913	*0.03*
Average Adj R^2		0.22		0.28		0.32	
Average n		268		268		268	

Panel B: High Leverage Group, mean LEV=0.500

Estimation Period=		One Year		Two Year		Three Year	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	0.076	*0.00*	0.187	*0.00*	0.289	*0.00*
DR	?	0.045	*0.03*	-0.034	*0.63*	-0.082	*0.36*
RET	+	0.092	*0.03*	0.122	*0.00*	0.146	*0.00*
RET*DR	+	0.381	*0.01*	0.244	*0.01*	0.232	*0.14*
PIN	?	-0.101	*0.23*	-0.275	*0.17*	-0.469	*0.02*
PIN*DR	?	-0.303	*0.01*	0.054	*0.86*	0.270	*0.36*
PIN*RET	-	-0.386	*0.05*	-0.101	*0.17*	0.005	*0.49*
PIN*RET*DR	+	0.426	*0.16*	0.926	*0.03*	1.392	*0.08*
Average Adj R^2		0.24		0.38		0.43	
Average n		268		268		268	

TABLE 4 Continued

Notes: This table presents the result of Fama MacBeth regressions estimated annually over the 1983 to 2001 time horizon. P-values are based on the time series standard errors of the coefficient estimates, where the standard errors are corrected for autocorrelation using the Newey-West procedure. P-values are one tailed when the sign of the coefficient is predicted, two-tailed otherwise. The low and high leverage groups represent the lowest (highest) quartile of firms ranked annually on LEV. In one year specification earnings and returns are measured over the fiscal year. In the two year specification earnings and returns are aggregated over the current and prior fiscal year. In the three year specification earnings and returns are aggregated over the current and prior two fiscal years. NI is equal to cumulative net income before extraordinary items (Compustat #18) divided by beginning of aggregation period market value of equity. RET is the buy and hold return over the aggregation period. DR is equal to one if RET is negative, zero otherwise. LEV is defined as total debt (Compustat #9+Compustat #34) divided by total assets (Compustat #6) as of the end of the aggregation period. PIN is the probability of an information based trade as of the end of the aggregation period.

TABLE 5
Conservatism, Litigation and PIN
Fama- MacBeth Regressions

$$NI = \alpha + \beta_1 DR + \beta_2 RET + \beta_3 RET * DR + \beta_4 MB + \beta_5 MB * DR + \beta_6 MB * RET + \beta_7 MB * RET * DR + \beta_8 LEV + \beta_9 LEV * DR + \beta_{10} LEV * RET + \beta_{11} LEV * RET * DR + \beta_{12} PROBLIT + \beta_{13} PROBLIT * DR + \beta_{14} PROBLIT * RET + \beta_{15} PROBLIT * RET * DR + \beta_{16} PIN + \beta_{17} PIN * DR + \beta_{18} PIN * RET + \beta_{19} PIN * RET * DR + \varepsilon$$

Estimation Period=		One Year		Two Year		Three Year	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	0.111	*0.00*	0.193	*0.00*	0.294	*0.00*
DR	?	0.002	*0.89*	0.021	*0.53*	-0.007	*0.74*
RET	+	0.063	*0.02*	0.170	*0.00*	0.236	*0.00*
RET*DR	+	0.021	*0.42*	0.044	*0.28*	0.103	*0.09*
MB	?	-0.008	*0.00*	-0.015	*0.00*	-0.030	*0.00*
MB*DR	?	0.000	*0.97*	-0.010	*0.05*	-0.007	*0.14*
MB*RET	-	-0.003	*0.11*	-0.012	*0.00*	-0.015	*0.00*
MB*RET*DR	-/+	-0.023	*0.09*	-0.019	*0.08*	-0.024	*0.03*
LEV	?	-0.033	*0.01*	-0.023	*0.22*	-0.041	*0.14*
LEV*DR	?	-0.031	*0.33*	-0.090	*0.06*	-0.074	*0.32*
LEV*RET	-	-0.089	*0.01*	-0.064	*0.10*	-0.011	*0.36*
LEV*RET*DR	+	0.497	*0.00*	0.338	*0.00*	0.297	*0.08*
PROBLIT	?	-0.017	*0.11*	0.004	*0.80*	0.021	*0.54*
PROBLIT*DR	?	0.011	*0.39*	0.011	*0.69*	-0.029	*0.59*
PROBLIT*RET	?	0.001	*0.49*	-0.019	*0.17*	-0.016	*0.30*
PROBLIT*RET*DR	+	0.126	*0.01*	0.236	*0.00*	0.187	*0.00*
PIN	?	-0.150	*0.00*	-0.274	*0.00*	-0.356	*0.01*
PIN*DR	?	-0.030	*0.61*	-0.022	*0.85*	0.071	*0.58*
PIN*RET	-	0.110	*0.08*	-0.011	*0.40*	-0.134	*0.04*
PIN*RET*DR	+	0.537	*0.06*	0.506	*0.06*	0.637	*0.05*
Average Adj R^2		0.26		0.31		0.37	
Average n		872		872		872	

Notes: This table presents the result of Fama MacBeth regressions estimated annually over the 1983 to 2001 time horizon. P-values are based on the time series standard errors of the coefficient estimates, where the standard errors are corrected for autocorrelation using the Newey-West procedure. P-values are one tailed. In one year specification earnings and returns are measured over the fiscal year. In the two year specification earnings and returns are aggregated over the current and prior fiscal year. In the three year specification earnings and returns are aggregated over the current and prior two fiscal years. NI is equal to cumulative net income before extraordinary items (Compustat #18) divided by beginning of aggregation period market value of equity. RET is the buy and hold return over the aggregation period. DR is equal to one if RET is negative, zero otherwise. MB is the market to book ratio defined as market value of equity (Compustat #199*Compustat #25) divided by book value of equity (Compustat # 60) as of the end of the aggregation period. LEV is defined as total debt (Compustat #9+Compustat #34) divided by total assets (Compustat #6) as of the end of the aggregation period. PROBLIT is the probability of auditor litigation, where the probabilities are calculated using the parameters from Table 3 of Shu (2000) as of the end of the aggregation period. PIN is the probability of an information based trade as of the end of the aggregation period.

TABLE 6
Changes in PIN Analysis Controlling for Beginning of Change Period PIN
Fama- MacBeth Regressions

Panel A: Positive Returns (Good News) Sample

$$NI_t = \alpha + \beta_1 RET_t + \beta_2 \Delta PIN_{t+X} + \beta_3 \Delta PIN_{t+X} * RET_t + \beta_4 PIN_{t-1+X} + \beta_5 PIN_{t-1+X} * RET_t + \varepsilon_t$$

Change Period=		x=-1		x=0		x=+1	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	0.068	*0.00*	0.064	*0.00*	0.071	*0.00*
RET_t	+	0.026	*0.19*	0.063	*0.01*	0.060	*0.01*
ΔPIN_{t+x}	?	0.015	*0.68*	-0.033	*0.42*	-0.102	*0.02*
ΔPIN_{t+x}*RET_t	-	-0.180	*0.07*	-0.092	*0.32*	-0.003	*0.49*
PIN_{t-1+x}	?	-0.032	*0.38*	-0.021	*0.53*	-0.053	*0.06*
PIN_{t-1+x}*RET_t	-	0.085	*0.28*	-0.071	*0.24*	-0.076	*0.19*
Average Adj R^2		0.05		0.06		0.05	
Average n		597		597		597	

Panel B: Negative Returns (Bad News) Sample

$$NI_t = \alpha + \beta_1 RET_t + \beta_2 \Delta PIN_{t+X} + \beta_3 \Delta PIN_{t+X} * RET_t + \beta_4 PIN_{t-1+X} + \beta_5 PIN_{t-1+X} * RET_t + \varepsilon_t$$

Change Period=		x=-1		x=0		x=+1	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	0.076	*0.00*	0.069	*0.00*	0.085	*0.00*
RET_t	+	0.350	*0.00*	0.210	*0.04*	0.199	*0.08*
ΔPIN_{t+x}	?	0.028	*0.72*	-0.026	*0.67*	-0.212	*0.04*
ΔPIN_{t+x}*RET_t	+	0.470	*0.09*	0.873	*0.02*	-0.066	*0.45*
PIN_{t-1+x}	?	-0.069	*0.28*	-0.043	*0.36*	-0.128	*0.09*
PIN_{t-1+x}*RET_t	+	0.160	*0.37*	0.786	*0.03*	0.811	*0.08*
Average Adj R^2		0.16		0.17		0.18	
Average n		343		343		343	

TABLE 6 Continued

Panel C: Combined Sample

$$NI_t = \alpha + \beta_1 DR_t + \beta_2 RET_t + \beta_3 RET_t * DR_t + \beta_4 \Delta PIN_{t+X} + \beta_5 \Delta PIN_{t+X} * DR_t + \beta_6 \Delta PIN_{t+X} * RET_t + \beta_7 \Delta PIN_{t+X} * RET_t * DR_t + \beta_8 PIN_{t-1+X} + \beta_9 PIN_{t-1+X} * DR_t + \beta_{10} PIN_{t-1+X} * RET_t + \beta_{11} PIN_{t-1+X} * RET_t * DR_t + \varepsilon_t$$

Change Period=		x=-1		x=0		x=+1	
	Predicted Sign	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*	Parameter Estimate	*p-value*
INTERCEPT	?	0.068	*0.00*	0.064	*0.00*	0.071	*0.00*
DR_t	?	0.008	*0.68*	0.005	*0.73*	0.015	*0.41*
RET_t	+	0.026	*0.19*	0.063	*0.01*	0.060	*0.01*
RET_t*DR_t	+	0.324	*0.01*	0.147	*0.05*	0.139	*0.15*
ΔPIN_{t+x}	?	0.015	*0.68*	-0.033	*0.42*	-0.102	*0.02*
$\Delta PIN_{t+x}*DR_t$	?	0.013	*0.90*	0.007	*0.93*	-0.109	*0.16*
$\Delta PIN_{t+x}*RET_t$	-	-0.180	*0.08*	-0.092	*0.32*	-0.003	*0.49*
$\Delta PIN_{t+x}*RET_t*DR_t$	+	0.650	*0.03*	0.965	*0.01*	-0.063	*0.45*
PIN_{t-1+x}	?	-0.032	*0.38*	-0.021	*0.53*	-0.053	*0.06*
$PIN_{t-1+x}*DR_t$	?	-0.037	*0.64*	-0.023	*0.74*	-0.075	*0.32*
$PIN_{t-1+x}*RET_t$	-	0.085	*0.28*	-0.071	*0.24*	-0.076	*0.19*
$PIN_{t-1+x}*RET_t*DR_t$	+	0.075	*0.89*	0.856	*0.02*	0.887	*0.06*
Average Adj R^2		0.20		0.20		0.21	
Average n		940		940		940	

Notes: This table presents the result of Fama MacBeth regressions estimated annually over the 1985 to 2000 time horizon. P-values are based on the time series standard errors of the coefficient estimates, where the standard errors are corrected for autocorrelation using the Newey-West procedure. P-values are one tailed when the sign of the coefficient is predicted, two-tailed otherwise. NI is equal to cumulative net income before extraordinary items (Compustat #18) divided by beginning of period market value of equity. RET is the buy and hold return over the fiscal year. DR is equal to one if RET is negative, zero otherwise. ΔPIN the annual change in the PIN score, where the PIN is the probability of an information-based trade.

TABLE 7
Changes in PIN Analysis and Changes in Conservatism
Fama- MacBeth Regressions

Panel A: Coefficient Estimates

$$NI = \alpha + \beta_1 DR + \beta_2 RET + \beta_3 RET * DR + \varepsilon$$

ΔPIN Group	Mean ΔPIN	Year t-2 $\beta_{3,\,t-2}$	Year t-1 $\beta_{3,\,t-1}$	Year t $\beta_{3,\,t}$	Year t+1 $\beta_{3,\,t+1}$
Group 1	-0.073	0.517	0.461	0.589	0.653
Group 2	-0.017	0.351	0.441	0.410	0.703
Group 3	0.011	0.303	0.379	0.563	0.807
Group 4	0.069	0.524	0.514	0.553	0.777

Panel B: Within Group Test of Differences

ΔPIN Group	Pre Change Period Difference Year t-1, Year t-2 $\beta_{3,\,t-1}$-$\beta_{3,\,t-2}$	Concurrent Change Period Difference Year t, Year t-1 $\beta_{3,\,t}$-$\beta_{3,\,t-1}$	Post Change Period Difference Year t+1, Year t $\beta_{3,\,t+1}$-$\beta_{3,\,t}$
Group 1	-0.055	0.128	0.064
	0.20	*0.00*	*0.18*
Group 2	0.091	-0.031	0.293
	0.08	*0.28*	*0.00*
Group 3	0.076	0.184	0.244
	0.13	*0.01*	*0.02*
Group 4	-0.010	0.039	0.224
	0.44	*0.22*	*0.00*

Panel C: Across Group Test of Differences

	Pre Change Period Difference Year t-1, Year t-2 Group 4 ($\beta_{3,\,t-1}$-$\beta_{3,\,t-2}$)- Group 1 ($\beta_{3,\,t-1}$-$\beta_{3,\,t-2}$)	Concurrent Change Period Difference Year t, Year t-1 Group 4 ($\beta_{3,\,t}$-$\beta_{3,\,t-1}$)- Group 1 ($\beta_{3,\,t}$-$\beta_{3,\,t-1}$)	Post Change Period Difference Year t+1, Year t Group 4 ($\beta_{3,\,t+1}$-$\beta_{3,\,t}$)- Group 1 ($\beta_{3,\,t+1}$-$\beta_{3,\,t}$)
Group 4 – Group 1	0.045	-0.089	0.16
	0.31	*0.08*	*0.06*

TABLE 7 Continued

Notes: Panel A presents select Fama MacBeth coefficients from annual cross sectional estimates of Basu (1997) regression for each of the change in PIN quartiles, where quartiles are formed by ranking firms into four groups based on the change in PIN over period t, (i.e. PIN_t minus PIN_{t-1}). Panels B and C test whether the time series average of difference in coefficients is different from zero. P-values are based on the time series standard errors of the coefficient estimates, where the standard errors are corrected for autocorrelation using the Newey-West procedure. P-values are one tailed. NI is equal to net income before extraordinary items (Compustat #18) divided by beginning of fiscal period market value of equity. RET is the buy and hold return over the fiscal year. DR is equal to one if RET is negative, zero otherwise. ΔPIN the annual change in the PIN score, where the PIN is the probability of an information-based trade.